FOOD SHORTAGE
AND
AGRICULTURE

222

BY

M. K. GANDHI

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delusion. True democracy requires that the people should manage their own affairs. The less there is of Government, therefore, the better. Instead of this, food control increases the dominance of the Government over the life of the people. Hence his uncompromising opposition to control.

Besides, food control has led to corruption and black-marketing. Never before has the business morality of our people been so low as it is under control, when traders hoard up stock and thus increase scarcity, sell in the black market and pile up huge fortunes for themselves. The temptation for Government officers, both high and low, to receive bribes has increased with the advent of control, and many are falling a prey to it. Naturally both these interests would have the controls remain, and so work hard against their withdrawal. But if Gandhiji's advice is to be followed, it would seem that the Government would have to be firm and remove the controls resolutely. This may lead to high prices temporarily, but Gandhiji held that they would settle down soon to a more normal level. He believed in the end that there really was no food shortage beyond what was created by hoarders under the food control policy of the Government.

Under Agriculture have been included here from the *Harijan* whatever hints could be found generally regarding methods of improving agriculture even if they were not made from the point of view of meeting food scarcity. So far as agriculture went, Gandhiji seemed to concern himself only with the question of increasing soil fertility by the use of organic manures and with improving our cattle, apparently because other problems relating to agriculture were too big to be tackled by the individual immediately without State aid. Consequently the suggestions contained here relate primarily to these two topics. They are however of great importance, especially as the tendency in our country today seems to be towards the use of chemical fertilizers and tractors, and away from a realization of the vital importance of tackling problems

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Mandi : (mandee) a store-house, bazaar
Moong dal : (moong dal) a kind of pulse
Musoor : (masoor) a kind of pulse
Nullah : (nallaa) watercourse
Panchayat : (panchaayat) a council of five members
Panchayat Raj : (panchaayat raaj) a rule of the council of five
Pandit : (pandita) a learned person
Penda : (pendaa) a kind of Indian sweetmeat
Pinjrapole : (pinjaraapol) / Panjrapole : (panjaraapol) — an institution for sheltering crippled and aged cows
Puri : (puree) a small cake
Rabi (crop) : (raabee) winter (crop)
Rasgulla : (rasagullaa) an Indian sweetmeat
Roti : (rotee) a cake
Sarson : (sarasan) mustard
Satyagraha : (satyaagraha) non-violent resistance to evil through clinging to truth
Shakkar : (shakkar) sugar
Suran : (suran) a kind of Indian fruit vegetable
Sowcar : (saavakaar) a moneylender
Thali : (thaalee) a tray
Turdal : (toordal) a kind of pulse
Toddy : (tadee) liquor made from the juice of palm tree
Urad : (udada) a kind of pulse
Vanaspati : (vanaspatee) vegetable ghee

Fresh fruit is good to eat, but only a little is necessary to give tone to the system. It is an expensive article, and an over-indulgence by the well-to-do has deprived the poor and the ailing of an article which they need much more than the well-to-do.

Any medical man who has studied the science of dietetics will certify that what I have suggested can do no harm to the body, on the contrary it must conduce to better health.

This is only one way of conserving foodstuff. It is obvious. But by itself it cannot produce much visible effect.

Grain-dealers have to shed their greed and the habit of making as much profit as possible. They must be satisfied with as little as possible. They run the risk of being looted, if they do not gain the credit of being keepers of grain for the sake of the poor. They should be in touch with the people in their neighbourhood. Congressmen have to visit grain-dealers within their beat and give them the message of the time.

By far the most important part of the work consists in educating the villagers to keep what they have and to induce cultivation of fresh crops wherever water is available. This requires widespread and intelligent propaganda. It is not generally known that bananas, potatoes, beetroot, yam and *suran*, and in a measure pumpkin are a food crop easily grown. They can take the place of bread in time of need.

There is too scarcity of money. There may be grain available but no money to buy it with. There is no money because there is no employment. This has to be found. Spinning is the readiest and the handiest. But local needs may supply other sources of labour. Each available source has to be tapped so that there is no want of employment. Only the lazy ones need and must starve. Patient handling will induce even this class to shed their laziness.

On the way to Kashi, 19-1-'42

Harijan, 25-1-1942

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PRESS STATEMENT

The food situation brought the Private Secretary of H. E. the Viceroy to me. Could I say something in order to lift the question out of the political arena and out of the general distrust of Government intentions and policy? As the matter brooks no delay I give here the purport of what I said. So far as the Congress policy is concerned His Excellency should invite Maulanasahib and if he cannot come ask him to name his deputy. I personally feel that the present irresponsible executive should be immediately replaced by a responsible one chosen from the elected members of the Central Legislative. I also personally feel that this responsibility should be shouldered by the elected members of the Central Legislature irrespective of parties, for famine of cloth and food is common to the millions of India. Whether the Government can accept the suggestion and whether the different political parties that compose the Central Legislature consider it practicable or not is more than I can say. But this much I can say without fear of contradiction. I have little doubt that if the mercantile community and the official world become honest, if only in face of the impending calamity, we are such a vast country that we can just tide over the difficulty even if no help comes from the outside world, which is itself groaning. Grain and cloth dealers must not hoard, must not speculate. Food should be grown on all cultivable areas wherever water is or is made available. Flower gardens should be used for growing food crops. This has been done during the period of war. The present is, in some respects, worse than the war period. Before we have eaten up the grain we have in stock we must economize like misers. All ceremonial functions should be stopped. Women can play the highest part in the alleviation of the present distress by economizing in their

poly organization like the Government of India. It is the largest autocracy the world has known. Democracy has been reserved only for Great Britain. And when it rules and exploits millions belonging to other races, it becomes an unmitigated evil. It corrupts the whole island with the idea that such exploitation is the best thing for an enlightened democracy to do. It would be well to remember this fundamental fact, if I have correctly estimated it. If we recognize this, while dealing with the immediate problem we shall be patient with the present actors. There is no call here for patience with the evil. The distinction will enable us the better to deal with the evil.

We must then first put our own house in order as far as may be, and at the same time demand from the foreign Government that since they mean what they say, let them at once replace the irresponsible executive with the elected and responsible members from the Central Legislature, however archaic and based only on a limited franchise it may be. There is nothing to prevent the Viceroy from doing this today. I do not propose to answer the difficulties in anticipation. "Where there's a will, there's a way." This one act will restore confidence and allay panic.

"Grow more food" was not a bad cry during the war. It is a greater necessity now. This can be best done only by a national executive. Even its mistakes will not loom as large as those of a nominated executive, however able the latter may be. As it is, even their ability and integrity are in question—rightly so or wrongly is beside the point in this connection. Everything possible should be done to draw water from the bowels of the earth. There is talent enough in this country for the purpose. Provincial selfishness should give place to the national want.

In addition to, not in the place of these measures, grain should be imported from wherever it can be had.

Sevagram, 10-2-'46

Harijan, 17-2-1946

before long to give the people a balanced diet and shorten the period of reduced rations.

My optimism is irresistible, but I admit that nothing will be possible without whole-hearted co-operation on the part of both the Government and the public. Without it, even the imported foodstuffs may be squandered and maldistributed. Besides, we are not yet independent. Relying on outside help will make us still more dependent. If, however, without relying on them, we do get imports of foodstuffs, we shall gratefully accept and make the best use of them. While it is the duty of the Government to try to get food from outside, I do not think it is good for us to look either to them or to other countries. What is more, disappointment from that direction will be positively harmful for the morale of our people in these hard times. But if the people become united and determined to look to none save God for help and do not oppose such Governmental measures as they find useful, there will be no cause for disappointment. Such action will enable the people to emerge stronger from the ordeal and foreign countries will think of their duty to send us food of their own accord wherever they can spare it. God helps those who help themselves. How can others withhold help from the self-reliant? The British Government, during their hour of need, took away all that India had and today we have to put up with the consequences of their action. Need we then tell them and those whom they helped by depleting India's resources that their duty today is towards India?

Sevagram, 16-2-'46 (From *Harijanbandhu*)

Harijan, 24-2-1946

"The most effective way to get whole rice find its permanent way into our dietary is to teach our womenfolk the science of dietetics."

It is very true that this peremptory reform can be brought about quickly by educating our women in the art of conservative cookery. How this education can be imparted is a serious question. Schools and colleges are perhaps the most ready-made media, let alone the press and the platform. If the people are to save themselves and the starving millions, during this critical period the press and the platform have to respond to the urgent need.

Sevagram, 17-2-'46

Harijan, 24-2-1946

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THE GRIM SPECTRE

The grim spectre of the impending famine filled Gandhiji's mind during the brief interval that he was at Sevagram after his return from Madras. He addressed the Ashram people after the evening prayer on the same day to emphasize the supreme necessity of conserving and economizing food and increasing its supply by laying under cultivation every available inch of space that could be used for growing food. He took up the question with Dr. Zakir Hussain and some other members of the Talimi Sangh who came to him for a talk on the afternoon of the 16th inst. Since *Nayee Talim* meant a living co-relationship with the actual conditions of life, it ought to respond to every change in the latter. "It would not, therefore, do for you to say in the present crisis that you are occupied with your educational activity whilst the people are threatened with death due to starvation. *Nayee Talim* must react to the present situation by converting itself into an instrument for increasing our food supply and teaching people how to meet the danger of food shortage. If the students under *Nayee*

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FOOD SHORTAGE

In regard to the food shortage I admit that Government alone has adequate resources to cope with it. But even so we need not apathetically resign ourselves to fate, fixing our gaze on the skies for the rains to come. There is an inexhaustible reservoir of water in the bowels of the earth. It should be tapped, even though we may have to dig two thousand feet deep for it, and used for growing food. We may not blame fate before we have exhausted all available means for combating a threatening calamity.

Today there is a lot of wastage in food going on in big cities like Bombay in the form of feasts and ceremonies. It is the sacred duty of every man, woman and child to conserve every grain of food and every drop of oil and ghee in this crisis. One should eat no more than necessary to keep the body in health and fitness when millions are faced with the prospect of death through starvation. The foodstuffs thus saved can be distributed among the needy poor—not as alms but as remuneration for honest labour.

Poona, 23-2-'46

Harijan, 3-3-1946

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A USEFUL PAMPHLET

A friend sends me a copy of a leaflet published by the Department of Agriculture, Bombay Province. It contains hints on small scale vegetable cultivation in compounds of bungalows etc. This was published in 1942 during war time in pursuance of a campaign for growing more food. What was then necessary is much more so now in view of the increasing shortage of food. It is a pity that the leaflet is printed in English. It may be, how-

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HELPFUL HINTS

A correspondent writes:

"You are at present in Poona. I understand from the papers that H. H. the Aga Khan is your friend. He has plenty of land and water supply at his disposal in his palace in Poona. The same applies to the spacious grounds of Government House at Ganeshkhind. Could not both these places be utilized for growing food? Could you suggest it to him?

"You believe in fasts. You have said that fasts are not merely for attaining religious merit but are also beneficial for health. Can you not then recommend to the well-fed abstention from food either one day or even one meal or more during the week? A great deal of foodstuffs could thus be made available to the poor.

"They say that even a small quantity of sprouted grain, if eaten raw, provides the requisite nourishment. Is this so?"

The above is condensed from a letter. All the three suggestions are sound and could easily be put into practice. The first is obviously for those who possess both land and water; the second for the well-to-do; the third applies to all. In essence it means that whatever can be eaten raw should be so eaten. By intelligently following this rule one can make a small quantity go a long way. I have little doubt that if people understood the laws of dietetics and acted accordingly, a tremendous economy in food could be effected.

(From *Harijansevak*)

Poona, 1-3-'46

Harijan, 10-3-1946

tion I draw His Excellency's attention to the following A.P.I. message published in the *Amrita Bazar Patrika* of 11-2-'46.

Dacca, Feb. 8.

'It is learnt that huge quantities of decomposed *atta* are being destroyed for the last few days by throwing them into the river Shitalaksha at Narayanganj.'

"The campaign against despondency and for growing more food will avail nothing, unless bribery which is going on as never before is stopped and honesty and straight dealing begin to pervade the Government ranks and the Public."

* * *

"Thank you for your letter of the 21st February making suggestions to meet the food situation. His Excellency, to whom I have shown your letter, is grateful to you for writing, and will have the various proposals examined where this has not been done already.

"2. Only a day or two ago His Excellency suggested to the Commander-in-Chief that it might be possible for the R.I.N. to assist with fishing. Recent events may make this difficult, but meanwhile His Excellency has initiated enquiries about the possibility of importing dried fish from Canada and Newfoundland, and also about the securing of suitable vessels and equipment so as to make a start with developing on modern lines the fisheries industry. Already the Army is doing a good deal in the Grow More Food campaign and is releasing machinery for digging wells, levelling ground, etc.

"3. In Delhi a considerable part of the Central Vista is to be ploughed up and the gardens of bungalows are to be used for growing vegetables on a larger scale. The sending of food parcels to friends or relatives outside India has been ordered to be stopped and an urgent examination is being undertaken of the question of exporting groundnuts, oil cakes, etc.

"4. Bribery and corruption is admitted to be one of the worst enemies of efficient food administration. This is also one of the most difficult to defeat. The detailed

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QUESTION BOX

Q. You ask people not to eat polished rice but I fear the disease is too far gone. Polished rice is washed again and again and the water thrown away. It is then boiled and that water too is emptied into the drain thus depriving the cereal of all its vitamin value. The rice thus served, with each grain separate, is pleasant for both the eye and the palate. The practice obtains even in student's hostels. How are we to get rid of it?

A. I am aware of the above-mentioned malpractice. We live in the poorest of poor countries and yet are unable or unwilling to give up such harmful habits. Each one thinks only of himself. We look upon our neighbours as strangers instead of as our kith and kin. What does it matter to us whether they live or die? If they die it is their own fault. If they live it is accredited to their merit. Life and death are not in our hands. Therefore, let us eat, drink and be merry!

In such a distorted view of life we have to follow what we consider to be our duty and believe that what is true will one day be followed. Until then, whenever occasion arises we must proclaim from the housetops what we consider to be right.

Q. You say that those who eat fish should be provided with the same. Does not this entail violence both for him who eats and him who provides the fish?

A. Both commit violence. So do those who eat vegetables. This kind of violence is inherent in all embodied life, therefore, in man too. It is in this condition and in spite of it that we have to practise non-violence as a duty. I have often indicated how we may do so. The man who coerces another not to eat fish commits more violence than he who eats it. Fishermen, fish vendors, and fish eaters are probably unaware of any violence in their action. Even if they were they may look upon it

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BEGGING FOR FOOD

As for the F.A.U.'s (Friends' Ambulance Unit's) plan of work for the prevention of famine, while generally approving of it, Gandhiji did not like the idea of what he called "begging for food from outside". "If food comes it would be welcome. But we should not depend on it. India is the granary of the East and now she has to go a-begging for food to America and other countries. I do not like this. Somehow or other, if we rely on self-help, strength comes, we do not know from where. Probably it comes from the original source and people feel they need not die. Moreover, arrival of food in the ports by itself would not solve the problem unless it is made available where it is most needed. Distribution is the real problem. Unless it is tackled there is danger that the food will rot in the ports while people are dying in the interior. At present it seems almost a hopeless task through the present corruption. A Government official sent a note the other day showing how it would be at least two months between the arrival of the food ships in the ports and the food actually reaching the affected areas. In the meantime what are the people to do? I have, therefore, suggested that they should utilize the subsoil water to grow whatever they can by their own effort. If crores take up the cue, they can do much to save themselves even before the food arrives from outside."

Uruli, 23-3-'46

Harijan, 7-4-1946

a rupee ; the control price is 4 *seers*. Supplies being apprehended to be much less than the demand, there is bound to be a black market where selfish people can buy foodstuffs at higher prices to satisfy their individual needs. No compulsion would be necessary if cultivators realize that it is their social and patriotic duty to do their utmost to feed their brothers and sisters in urban areas, and also landless people living in the rural areas. The cultivator is in every sense of the word the *Anna-data* and I ask you to appeal to him at this critical juncture not to hoard, not to sell in the black market but to supply in the greatest measure possible to the Government stores, so that food may be distributed equitably and equally to all people, rich and poor alike, and hunger and destitution may be avoided. Your voice goes far and wide and I therefore appeal to you to take up this work. Very many schemes have been considered for the purpose of ensuring adequate supplies in our urban areas, but whatever the proposals may be, the net result is that in every case the cultivator is asked to part with his grain. Unless the consumers in rural and urban areas are fed, there are bound to be disturbances of every kind. We are doing our very best to encourage the 'Grow More Food' and 'Grow More Vegetables' campaigns in the United Provinces. The various suggestions made by you have all been adopted. Instructions have been issued to plough all Government lands in Government buildings etc. Private owners have also been offered expert advice and are being given facilities by the supply of free seeds and free water from irrigation channels. Assistance in the digging of wells has also been given. After all is said and done, without public co-operation little progress can be made and co-operation must take the form of the *Anna-data* giving the gift of food grains to the utmost of his capacity."

This note from Dr. Katju is worthy of close attention by the Kisan and his guides as also urban people. The impending calamity can be turned to good use. Then

one point of view it is even more than that. Wheat stored in villages is far more useful than sacks of it lying in ports. Therefore, it is desirable to make the mixing of bran with wheat flour compulsory. The war is over but post-war conditions are worse for us than during the war, and the situation is daily deteriorating. God alone knows when it will improve.

(From *Harijanbandhu*)

New Delhi, 22-4-'46

Harijan, 28-4-1946

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DEPLORABLE

Shri J. C. Kumarappa, writing in the *Gram Udyog Patrika*, says that to rely on or encourage imports from abroad is wholly wrong in principle. In the matter of the expected shortage of sugar owing to the failure of winter rains in the U.P. and Bihar and by frost in the Punjab and N.W.F.P., he suggests that the deficit in sugar should be made good by tapping palm trees in jungle areas for *nira* and preparing *gur* and sugar from it.

In regard to the import of a primary necessity like kerosene oil, he suggests further extraction of vegetable oils to meet our needs. Imports will entail export of some of our own production to pay for them, and will only cause further distress in the long run.

He also draws attention to the insidious scheme for the development of Virginia Cigarette tobacco in Bihar sponsored by Sir Herbert Stewart (Vice-Chairman of the Imperial Council of Agricultural Research). Under the scheme a number of research stations on tobacco are to be opened in various places, and the Imperial Tobacco Company have given two studentships of £500 per annum for training in tobacco cultivation abroad. At such a time the obvious duty of a government should have been not to waste good money or time on tobacco research, but to devote both to reclaim all available land

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MANGO SEED KERNEL

A friend has sent me an extract from *Current Science* showing how mango seed kernel is a fair substitute for cereals and fodder.

> "According to a recent estimate, the concentrates available in India are sufficient only for 29.1 per cent and fodder for 78.5 per cent of adult bovine population. This does not take into account the requirements of goats, sheep and equines. The shortage is further accentuated during periods of famine. In order to meet the shortages, the Nutritional Research Laboratory at Izat-Nagar have been exploring new sources of food-stuffs. This investigation relates to the use of mango seed kernel as a cattle and human food. At present the material is thrown away as waste. From chemical analysis of kernels it has been found to be rich in carbohydrates and fats (crude protein 8.5 per cent, other extract 8.85 per cent and soluble carbohydrates 74.49 per cent on dry basis.)
>
> * * *
>
> "The observations credit mango seed kernel with a place in the category of food grains and make available every year about 70 million lbs. digestible protein and 780 million lbs. of starch equivalent from a hitherto unutilized source. It has been also calculated that the digestible protein obtained from 80 lbs. of oats is equal to that of 100 lbs. of the kernel and the starch equivalent for 86 lbs."

I have known this use from my early youth. But no one seems to have thought of conserving this seed for food. The mango season is upon us and though much time has been lost, it will be a good thing if every mango seed was saved and the kernel baked and eaten in the place of cereals or given to those who need it. Every ounce of food saved is so much gained.

Delhi, 21-5-'46

Harijan, 26-5-1946

23

SOYA BEANS

It should be remembered that soya beans are a most nutritious diet. It stands at the top of all the known articles of diet because of its low percentage of carbohydrates and high percentage of salts, protein and fat. Its energy value is 2,100 calories per lb. against 1,750 of wheat and 1,530 of gram. It contains 40 per cent of protein and 20.3 per cent of fat against 19 and 4.3 respectively of gram and 14.8 and 10.5 of eggs. Therefore no one should take soya beans in addition to the usual protein and fatty foods. The quantity, therefore, of wheat and ghee should be reduced and *dal* omitted altogether, soya beans being themselves a highly nuritious *dal*.

Harijan, 19-10-1935

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SOYA BEAN CULTIVATION

Inquiries are being made as to where soya beans are to be had and how they are to be sown and in what ways they are to be cooked. I give below a free translation of the main parts of a Gujarati leaflet published by the Baroda State Food Survey Office. Its cost is one pice :

" Soya beans grow on a plant from one foot to fifteen inches in height. Every pod has on an average three beans. The plant has many varieties. The bean may be white, yellow, blackish, variegated, etc. The yellow variety has the largest percentage of protein and fat. This variety is more nutritious than meat or eggs. The Chinese eat beans with rice. Soya bean flour may be mixed with ordinary flour in the proportion of 1 to 5 parts of wheat and turned into *chapatis*.

Soya bean crop improves the soil. Instead of deriving nitrogen like other plants from the soil, soya bean derives it from the air and thus enriches the soil.

25

IN PRAISE OF GROUNDNUT CAKE

A friend sends the following opinion of Prof. D. L. Sahasrabudhe, in praise of groundnut cake. It certainly deserves a trial.

There is a good deal of preaching done to encourage the use of soya beans as a food material, while groundnut which is extensively grown in India is not given the consideration it deserves. Groundnut is a very valuable oil-seed and food material. Groundnut itself is not easy for digestion and many times causes digestive disturbances. This is, however, due to the presence of a very high proportion of oil — 50 per cent. If the oil is extracted from well cleaned seed, the oil-cake left behind is a highly nutritious food material for human consumption and does not cause any trouble. The following is the average analysis of groundnut cake and soya beans.

	Groundnut cake per cent	Soya beans per cent
Moisture	8	8
Proteids	49	43
Carbohydrates	24	19.5
Fat	10	20
Fibre	4	5
Mineral matter	5	4.5

The groundnut cake compares very favourably with the soya beans. It is actually better than soya beans in the essential constituents, namely the proteids and the mineral matter. Further, the groundnut proteid is better than soya bean proteid in essential amino-acids as shown by the following figures:

The third is contentious. In a country where all life is largely held sacred and even when it is not, habit has made people reluctant to take any life, the suggestion may be difficult of adoption even by non-vegetarians. But a confirmed respecter of all life though I am, I have no difficulty in recommending for acceptance by meat-eaters the suggestion that the correspondent's wisdom has dictated. I hope to examine an argument in *Harijanbandhu* advanced against the taking of even noxious life without any connection with food.

The fourth suggestion, though sound, is not likely to produce any tangible result because of the ruling corruption and the inefficiency and irresponsibility of the Government. The difficulty will only be met when there is a national government which is responsible to the people and to which the people may look forward with confidence. It has been long coming. Will it ever come?

Mussoorie, 29-5-'46

Harijan, 9-6-1946

28

MINISTERS' FOOD RATIONS

Q. Whilst the food policy was in the hands of the Advisers to the Provincial Governors, there was no effective method of checking them. Things under the responsible Provincial Governments are different. Should it not be a matter of conscience with the Congress ministers to get their rations from common rationing depots and not take a grain more from any other source? This will immediately have a far-reaching effect. Today all controlling centres for food grains or cloth have become public dens for thieving and corruption. Equipped with the moral force that the ministers will gain by acting as suggested, they will be able to fight out the evil with success.

A. This question is a consolidation of many letters of complaints. I wholly agree with the suggestion made

out a living from their own produce. And, if the numerous authentic letters I receive are an indication of things as they are or should be, we need fear no starvation for want of life-giving vegetables plus a little milk for vegetarians, and fish, flesh or fowl for non-vegetarians.

Let India realize that as yet we have no appreciable quantity of food from outside our shores. Many are willing to help but they are themselves for the most part sufferers or have more calls on them than they are able to cope with. The transport difficulty is very real for all of them and our own will commence when the foodstuff reaches our shores. Internal transport and distribution constitute a problem by themselves. It is, therefore, practical wisdom to brace ourselves for the struggle and declare with one voice our resolve that we shall grow our eatables for ourselves and perish bravely in the attempt if we must.

This is the only way and no other.

New Delhi, 21-9-'46

Harijan, 29-9-1946

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CRIMINAL WASTE

The following is the gist of a long letter from one who writes from personal knowledge. The writer gives five instances of the mismanagement and inefficiency of those concerned which result in a colossal loss of food grains.

1. Entire lack of suitable storage for food grains which are thus exposed to destruction by rats, insects, etc.

2. Exposure of food grains to rain in *mandis*, railway goods, platforms and in front of retail shops.

3. Exposure of grain in uncovered heaps in *mandis* and in front of retail shops, so that millions of birds etc. feed on it all the year round.

to receive full value for his grain, and use the small grain and screening for cattle and chicken, as well as constitute a large saving in road and rail transport.

The Government is spending Rs. 150 crores for the purchase of food and allowing the equivalent of that sum in food grains to be destroyed in our own country.

In addition the writer refers to what has already been commented on more than once in these columns in regard to the wanton waste of food in our homes, the necessity for growing more food on every available scrap of land, of surveying what cultivable land can be tilled forthwith, and water whether by wells or other means provided. He also recommends the stoppage forthwith of the usual cow-dung as fuel in cities, and proper use of all kinds of refuse for manure.

New Delhi, 19-9-'46 A. K.

[All the suggestions made by the writer can and should be adopted at once, if a major disaster is to be averted. —M. K. G.]

Harijan, 29-9-1946

33

PRICES OF FOOD GRAINS

Q. The policy of the Interim Government is to keep down the prices of food grains. Would it not adversely affect their production?

A. I want to reduce the prices of food grains still further. I claim to be a peasant myself and I know that only a fraction of the price paid by the consumer actually reaches the grower of food. It should be the business of the Interim Government to see that the tiller of the soil gets full value of his produce and that every pie paid by the consumer reaches the peasant's pocket, or else the Government should get out. It can never be guilty of wishing to provide cheap grains to the consumer at the expense of the grower of food. The trouble with the cultivator is not low prices but the middleman.

rich lands. They can produce edible roots. But again it is difficult to induce people to revise their tastes and old habits. Look at these cocoanut trees. Cocoanut makes a good nutritious food. I am trying to accustom myself to it. Of course, I extract the oil from it and the remaining portion as you know, contains good protein. Then take the many kinds of roots in the soil of Bengal which belong to the potato tribe, these can be used as good food. Then again, you have abundance of fish. Fish, cocoanuts and these roots can easily take the place of rice." Incidentally Gandhiji mentioned the general supineness of the people. As an instance he mentioned the water hyacinth which, if the people *en masse* volunteered their services for a week without any aid from the Government, they could get rid of within a week's time, causing a saving of thousands of rupees.

Harijan, 9-2-1947

35

THE PROBLEM OF FOOD

In his speech at the prayer gathering Gandhiji said: "Those who ought to know all about our food have gathered together at the invitation of Dr. Rajendraprasad to give him the benefit of their advice in the grave food crisis. Any mistake made on this important matter may mean avoidable starvation and death of millions therefrom. India is not unfamiliar with starvation and death of tens of thousands, if not millions, due to famine, natural or man-made. I claim that in a well-ordered society there should be always prearranged mehods of successful treatment of scarcity of water and food crops. This is, however, not the occasion for describing a well-ordered society and for showing how it would deal with the matter. Our concern, for the present, is to see whether we can, with fair hope of success, deal with the present food crisis.

likely to deflect us from trying to the fullest extent our immense internal possibilities in the shape of utilizing every inch of arable land for growing crops for daily food in the place of growing money crops. We must reclaim waste land which is capable of being placed under immediate cultivation.

Centralization or Decentralization ?

Centralization of foodstuffs, I apprehend is ruinous. Decentralization easily deals a blow to black-marketing, saves time and money in transport to and fro. Moreover, the villager who grows India's cereals and pulses knows how to save his crops against rodents. The movement of grain from station to station makes it liable to be eaten by rodents. This costs the country many millions and deprives it of tons of grain, every ounce of which we badly need. If every Indian were to realize the necessity of growing food wherever it can be grown, we should most probably forget that there was scarcity of foodstuffs in the land. I have by no means dealt fully with the fascinating and absorbing subject of growing more food, but I hope I have said enough to stimulate interest and turn the wise towards the thought of how every individual can help in the laudable enterprise.

How to Deal with Shortage

Let me now show how to deal with the three per cent of grains we might possibly get from outside. Hindus observe a fast or a semi-fast every eleventh day per fortnight. Muslims and others are not prohibited from denying themselves, especially when it is for the sake of the starving millions. If the whole nation realized the beauty of this partial self-denial, India would more than cover the deficit caused by the voluntary deprivation of foreign aid.

Personally I hold that rationing has very limited use if any. If the producers were left to themselves, they would bring their produce to the market and everyone

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FOOD SHORTAGE

Gandhiji said in his post-prayer speech that the system of control and rationing in his opinion was unnatural and unbusinesslike. They had plenty of fertile land, there was enough water and no dearth of man-power. Why should there be food shortage under these circumstances. The public should be educated to become self-reliant. Once they knew that they had got to stand on their own legs, it would electrify the atmosphere. It was well known that fright took a larger toll of life than actual disease. He wanted them to shed all fear of calamity if they took the natural step of self-help. He was convinced that removal of food control would not result in a famine and deaths from starvation.

Birla House, New Delhi, 10-10-'47

Harijan, 19-10-1947

37

REMOVE CONTROLS

The committee appointed by Dr. Rajendraprasad had finished its deliberations. It was to consider the question of food only. But he (Gandhiji) had expressed his opinion some time ago that control over food and cloth should be removed without further delay. The war was over. Yet the prices were going up. There was food in the country and cloth too. Yet it did not reach the people. It was a sad state of affairs. The Government was trying to spoon-feed the people. Instead of that the people should be thrown on their own resources. The Civil Service was used to carrying on work from their offices. The red tape and the files controlled their activity. They had never come in contact with the peasants. They did not know them. He wished they would be humble enough to re-

lation resulting in unnecessary deaths, starvation and want of proper residence and clothing more poignant for the coming inclement weather. The second is certainly more spectacular. We dare not forget the first because it is not spectacular.

This food control is one of the vicious legacies of the last world war. Control then was probably inevitable because a very large quantity of cereals and other foodstuff were exported outside. This unnatural export was bound to create a man-made scarcity and lead to rationing in spite of its many drawbacks. Now there need be no export which we cannot avoid if we wish to. We would help the starving parts of the world, if we do not expect outside help for India in the way of food.

I have seen during my lifetime covering two generations several God-sent famines, but have no recollection of an occasion when rationing was even thought of.

Today, thank God, the monsoons have not failed us. There is, therefore, no real scarcity of food. There are enough cereals, pulses and oil seeds in the villages of India. The artificial control of prices, the growers do not, cannot understand. They, therefore, refuse willingly to part with their stock at a price much lower than they command in the open market. This naked fact needs no demonstration. It does not require statistics or desk-work civilians buried in their red-tape files to produce elaborate reports and essays to prove that there is scarcity. It is to be hoped that no one will frighten us by trotting out before us the bogey of over-population.

Advice of Experienced Men

Our ministers are of the people, from the people. Let them not arrogate to themselves greater knowledge than those experienced men who do not happen to occupy ministerial chairs—but who hold the view strongly that the sooner the control is removed the better. A physician writes to say that the food control has made it impossible for those who depend upon rationed food to procure eatable cereals and pulses and, therefore, he says the people needlessly suffer from ailments caused by rotten stuff.

had the pleasure of having several interviews. At that time he did not know whether he had any backing or not. But during the recent controversy he was agreeably surprised to discover that he had a very extensive backing from members of the public, unknown and well-known. Among the voluminous correspondence he had on the subject, he could not recall a single writer who dissented from him. He knew nothing about the view held by magnates like Shri Ghanshyamdas Birla or Lala Sri Ram, nor did he know that he was to have any support from the Socialist circles except when Dr. Ram Manohar Lohia met him and expressed his wholehearted approval of the ground he had adopted. He had no hesitation in suggesting that in the circumstances that faced the country on the food question Dr. Rajendraprasad should be guided by one member or more from his committee rather than by the permanent staff.

Birla House, New Delhi, 6-11-'47

Harijan, 16-11-1947

40

IN PRAISE OF DECONTROL

[The following extracts are taken from a very long thesis sent by a correspondent in favour of decontrol at least so far as food is concerned. —M. K. G.]

"By reducing rations from 1½ lb. to ¾ lb. the Government has further created a bigger vicious circle. The more the ration is reduced, the more the secret hoarding by the agriculturist. He knows that the lesser is the ration the greater is the demand of the black market and the more his earnings. He will hoard secretly and the correct figures of food grain production will not come to the Government. The lower production figures will cause a stir in the Government Department and they will contemplate a further reduction in the ration! The Government thus put themselves in anxiety and

or more up to two years according to their capacity. In every village, grain was stored according to old custom in underground stores. Every merchant whether in village, urban area or city, had big stocks of grain. Wherever we went, godown full of grains were seen. There were heaps of foodgrains. Where has all that gone? Why has it disappeared from all over the country? Why do everywhere people talk of famine? To-day, neither the consumer nor the businessman nor the Government has any stock. If the production is less, naturally there cannot be any export. It must be lying somewhere. How can it be brought out? The public is showing a critical tendency towards the Congress. There must be some good reason for their doing so, and this change in their attitude should not be ignored. The Congress, which is in power, is not able, owing to defects in the present procedure, to give to the public what as a matter of fact is really available in the country, and the public is displeased and interested parties are taking advantage of this situation to make the Congress unpopular. It is only the Congress which can maintain peace in the country and if it once loses its hold over the public, which may happen if the situation does not show signs of improvement and is allowed to deteriorate from day to day as it is doing, it will be very difficult, if not impossible, for it to avoid the storm that may come."

Harijan, 23-11-1947

that the growers would willingly give up hoarding and make available for the public, on fair returns, the cereals and pulses they were holding, and the grain-dealers would think more of selling the grain at the cheapest rate possible consistently with a reasonable profit for themselves, and the Government would be expected to loosen and finally give up the control by the earliest possible moment.

Birla House, New Delhi, 17 & 18-11-'47

Harijan, 30-11-1947

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GOVERNMENT'S DILEMMA

The last subject Gandhiji referred to in his after-prayer speech was the proposed removal of controls especially on food and cloth. The Government had hesitation in removing the controls because they fancied that there was real scarcity of foodstuffs and cloth in the land and that, therefore, there might be an inflation of prices which would hit hard the poor people, who were supposed, through these controls, to keep the wolf from the door and cover their nakedness. They suspected the honesty of the merchants, the growers and the middlemen. They feared that they were waiting hawk-like for the day of removal of controls so that they might prey upon the poor people and fill their pockets with ill-gotten gains. It was for them a choice between two evils and they considered the present control as a lesser evil.

Appeal to the Business Class

Gandhiji, therefore, appealed to the mercantile classes, growers and middlemen to disarm the suspicion and assure the authorities that decontrol would not only not lead to inflation but would lead to the comparative happiness of the poor people, and ease if not eradicate black-marketing and corruption.

Birla House, New Delhi, 22-11-'47

Harijan, 30-11-1947

In democracy the people's will must rule, and if the people of India had fallen so low that they would not do the right thing, he did not know that the present Government should hold office. But his hope was that with the removal of the control, the situation would improve all round. It would be a negation of democracy if the Government did everything and the people did nothing or thwarted the former. There was no reason why the *kisans* could not grow more food with proper guidance. If the Food Department would concentrate on ways and means of increasing production, he was sure that there would be no food shortage.

Birla House, New Delhi, 5-12-'47

Harijan, 14-12-1947

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CONTROLS AGAIN

In his post-prayer speech, Gandhiji said :— Sugar control has gone and control on cereals, pulses and cloth will go. The object of the removal is not to lower the prices at a bound, it is to return to normal life. Superimposed control is bad any day. It is worse in this country in that we are a nation of millions spread over a large area 1,900 miles long and 1,500 broad. I need not take into account the division of the country. We are not a military nation and we grow or can grow our own foodstuffs and enough cotton for our requirements. When this control is removed, the nation will breathe free, it will have the right to make mistakes. This ancient method, of progressing by making mistakes and correcting them, is the proper way. Keep a child in cotton wool and stunt it or kill it. If you will let it develop into a robust man, you will expose his body to all weathers, teaching him how to defy them. Precisely in the same manner, a government worth the name has to show the nation how to face deficits, bad weathers and other handicaps of life

Let us hope that these monied interests will rise to the occasion.

Birla House, New Delhi, 8-12-'47

Harijan, 21-12-1947

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STOCK GRAIN IN VILLAGES

Shri Vaikunth Lallubhai Mehta writes to say that in view of general decontrol it is imperative that there should be sufficient grain stocked in the hands, if possible, of the village *panchayats*, not for profiteering, but as insurance against scarcity by whatever cause induced. His original letter is in Gujarati which I have reproduced and dealt with in the Gujarati columns. Here has been given the pith of his argument. I have always held that whatever may be said in favour of cash payment of taxes, its introduction injured the nation to the extent that the system of stocking grain in the villages was disturbed. The conservation of grain in the villages is needed for the reason already mentioned. The condition always must be that the growers and dealers must not be greedy and unscrupulous. When this simple honesty becomes common, the consumer cannot be cheated. There is no question of high or low prices when a nation's economics are put on a sound basis and when all parties have an income commensurate with the expenditure required for the necessaries of life.

New Delhi, 22-12-'47

Harijan, 28-12-1947

PRICES AND DECONTROL

A friend said that where he was living, the decontrol had caused a rise in the price of sugar. Gandhiji said that in other places prices were reported to have fallen. There must be a local cause for a local rise.

Control on Petrol

There was the transport difficulty which came in the way of proper distribution. Dr. Mathai had his difficulties. There was shortage of coal and wagons. The Minister was trying to overcome them as early as he could. India carried on her business when there were no railways. But now when she had them, shortage of transport caused a real difficulty. What was then a proper substitute for or an addition to railway transport ? Motor transport at once came to the mind. But that transport could not function if there was no petrol. This pointed to the removal of the control over petrol. He did not know why it should be difficult. One could not do things by halves. If control had to go, it should at least go from petrol. Petrol was not a thing which was required by everybody. The Government might keep enough for their own requirements. They could any day buy petrol in the black market in daylight. If motor transport became easily available, there would be no dearness in the price of salt. He was told that production of salt was fair enough but the difficulty of transport came in the way.

Birla House, New Delhi, 19-12-'47

Harijan, 28-12-1947

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REMOVAL OF CONTROLS

Gandhiji was daily receiving telegrams and letters congratulating him on the removal of controls. It had a miraculous effect all round and the prices had gone down. Although the control on cloth was still there, the price of towels etc., he was told, had gone down. The businessmen knew that he (Gandhiji) was merely voicing the opinion of millions when he said that the controls should go. The goods of the black market were, therefore, coming into the open market and selling at reasonable prices. He was told, too, that there was plenty of sugar to be had. The price was Re. 1 per seer and it was lowered to As. 15 and even to As. 14 very often. He was told that the removal of the control had brought much relief to the people. He could take no credit for what was happening in the matter of controls. The real credit went to the masses whose wish he was voicing. If his personal voice had any effect, the unseemly communal trouble would have ceased long ago. In this matter they dubbed him as a visionary and a madcap. He knew that they were wrong and he was right. If he had been right and practical on many occasions in the past, why was he unpractical in this matter of life and death?

Birla House, New Delhi, 28-12-'47

Harijan, 4-1-1948

RESULTS OF DECONTROL

From the numerous letters and wires giving me thanks for the decontrols and pleading for more, I pick up the following written in English from a well-known businessman. He reduced to writing his thoughts at my instance:

"As desired by you I am giving below the following data about sugar, *gur, shakkar* and various other foodstuffs showing their present and past prices before decontrol:

	Present Rates.		Rates prevalent during the month of November before de-control of sugar was taken up by you.
Sugar	Rs. 37-8	per maund	Rs. 80 to 85 per maund
Gur Pansera	Rs. 13 to 15	" "	Rs. 30 to 32 " "
Shakkar	Rs. 14 to 18	" "	Rs. 37 to 45 " "
Sugar Cubes	As. 11	per packet	Rs. 1-8 to 1-12 per packet
Sugar *Desi*	Rs. 30 to 35	per maund	Rs. 75 to 80 per maund

"Thus there is a 50 per cent fall in prices of sugar and its allied products.

FOOD GRAINS

Wheat	Rs. 18 to 20	per maund	Rs. 40 to 50 per maund
Rice Basumati	Rs. 25	" "	Rs. 40 to 45 " "
Maize	Rs. 15 to 17	" "	Rs. 30 to 32 " "

GRAMS

Grams	Rs. 16 to 18	per maund	Rs. 38 to 40 per maund
Moong	Rs. 23	" "	Rs. 35 to 38 " "
Urad	Rs. 23	" "	Rs. 34 to 37 " "
Arhar	Rs. 18 to 19	" "	Rs. 30 to 32 " "

PULSES

Gram Pulse	Rs. 20	per maund	Rs. 30 to 32 per maund
Moong	Rs. 26	" "	Rs. 39 " "
Urad	Rs. 26	" "	Rs. 37 " "
Arhar	Rs. 22	" "	Rs. 32 " "

OILS

Sarson	Rs. 65	per maund	Rs. 75 per maund."

B. AGRICULTURE

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COMPOST MANURE

An All India Compost Conference was held in New Delhi during the month to consider the question of compost development on the widest scale possible. It was the conception of Shrimati Mirabehn and was presided over by Dr. Rajendraprasad. Sardar Datar Singh, Dr. Acharya and other eminent men in the line took part in it. Several important resolutions were passed by it on schemes for towns and villages. A sub-committee consisting of Shrimati Mirabehn, Shri Shivakumar Sharma, Dr. B. N. Lal and Dr. K. G. Joshi (with Dr. B. N. Lal as convener) was appointed to prepare a skeleton scheme for the provinces. The resolutions emphasized the necessity of "the agricultural utilization of town sewage, sullage and sludge, the utilization of the by-products of the slaughter house and other trade wastes (for example, wool waste, mill waste, leather waste, etc.) and for the composting of other materials like water-hyacinth, cane-trash, press-mud, forest leaves etc."

These resolutions are good and useful if they do not remain merely on paper. The chief thing is whether they would be reduced to practice throughout India. To do so would tax the resources of many Mirabehns. Given the willing co-operation of the masses of India, this country can not only drive out the shortage of food, but can provide India with more than enough. This organic manure ever enriches, never impoverishes the soil. The daily waste, judiciously composted, returns to the soil in the form of golden manure causing a saving of millions of rupees and increasing manifold, the total yield of grains and pulses. In addition, the judicious use of waste keeps

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SCAVENGERS ALL

G. I. Fowler states, in his *Wealth and Waste* that a proper disposal of human excreta would realise Rs. 2 per head per year. In the vast majority of cases, all this rich manure is being wasted and disease invited. He quotes Prof. Brultini, from his volume *The Use of Waste Materials*, who says that "nitrogen derived from the 282,000 residents of Delhi is sufficient to fertilize a minimum of 10,000 and a maximum of 95,000 acres." Because we do not know how to treat our scavengers, Delhi of ancient fame has pestilential spots of which we have to feel ashamed. If we all become scavengers, we would know how to treat ourselves and how to turn what today is poison into rich food for plant life. 30 crores of the population of India should mean, according to Dr. Fowler, an annual gain of 60 crores of rupees to the country, if we would but make a wise use of human excreta.

Harijan, 15-3-1935

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COMPOST MANURE

[There is in Indore an Institute of Plant Industry. It issues from time to time leaflets for those whom it is designed to serve. The first one of these describes the utility and the method of preparing compost manure from farm wastes. As it is valuable for Harijans and village workers who handle cattle-dung and night-soil, I copy below practically the whole of the leaflet incorporating footnotes into the running description of the process. —M. K. G.]

It has long been recognized that adequate and systematic recuperation of organic matter in Indian soils must be part of any successful scheme for intensive agriculture. It is also equally understood that the available sources of farm yard manure cannot supply the quantities

method described in the *Utilization of Agricultural Waste* (Howard and Wad, Oxford University Press, 1931). This article gives only a brief working outline of the process as applicable to the Indian cultivator's conditions.

The value of farm yard manure is appreciated in the case of irrigated crops in India, but periodic moderate dressings to fields under dry cultivation are equally essential. The Indore compost method quickly produces larger amounts of richer manure, which is, moreover, actively useful to crops immediately on application, which is not always the case with farm yard manure. Indore compost is ready for use after three months, when properly prepared, and is then a dark-brown or coffee-coloured amorphous substance, containing about 20 per cent of partially decomposed coarse material readily crushed between the fingers, the rest being fine enough when wet(and the colloidal particles therefore swollen) to pass through a sieve of 6 meshes per linear inch. The nitrogen content varies from .8 per cent to 1.0 per cent or more according to the nature of the wastes used. About fifty cartloads of compost per pair of bullocks can easily be made each year by the use of only one-fourth of the fresh dung along with 100 to 125 cartloads of farm wastes of all kinds and half of the quantity of urine-soaked earth which is available from the cattle-shed. The remaining half is also a good manure and can be added directly to fields. If more residues are available, all the dung and urine earth can be utilized to make about 150 cartloads of compost. The cost of making is 8½ annas per cartload of ripe compost at Indore rates of wages (men 7 annas, women 5 annas per day of eight hours).

1. Outline of Indore Method

The main feature of the process is to decompose rapidly a mixture of otherwise useless farm wastes with fresh dung, wood ash and urine earth in pits. The pits should not be deeper than 2 feet and should be 14 feet in breadth. A convenient length is 30 feet. This suits both large and small scale work; for instance a portion

soft, warm and dry bed on which cattle may rest and sleep can be made cheaply of loose earth. Convenient sources are threshing-floor sweepings, silt from choked drains and earth from silage pits. A flat 6 inches layer is sufficient to absorb all urine without nuisance, if wet patches are scrapped daily and thinly covered by a little fresh earth and with uneaten fodder from the manger over it. This urine earth should be removed and replaced every four months by a fresh layer. The finer portion should be reserved for compost making and the bigger lumps directly added to fields. It is a rapidly acting manure specially suitable as a top-dressing for any irrigated crop.

Harijan, 17-8-1935

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COMPOST MANURE

(*Contd.*)

4. Cow-dung and Ash

Only a quarter of the daily supply of fresh dung is needed ; this is applied as liquid ' slurry ', being mixed with water ; the rest can be made into fuel if required. Wood ashes from the kitchen and other places should be carefully collected and stored under cover.

5. Farm Wastes or Kuchra

Every type of vegetable waste not otherwise needed on the farm can be made into compost, e.g. weeds, stalks of cotton, pigeon pea, sesamum, safflower, niger, linseed, rape, black and green gram, sugarcane trash, stools of juar, and sugarcane, fallen leaves of trees and uneaten residues of grass, straw, juar and other fodders. Hard materials require cracking. This has been successfully done, even on soft unmetalled roads in Sind, by simply spreading such material on a cart track and periodically removing crushed portions and replacing them by unbroken stuff. Very hard residues like stumps and roots

on which the cattle rest and sleep. The material thus gets impregnated with urine as well as mixed and crushed by the animals. The bedding in the rainy season is made by sandwitching a layer of green withered stuff between two of dry wastes specially reserved for the purpose. Fresh dung left over after making the slurry can either be made into *kurdas*, i.e. dried dung cakes, or spread over the bedding in lumps not bigger than a small orange. The portion of the urine earth and fungus starter also left over after making the slurry is then scattered over the bedding next morning when it is removed by spades and *pals* from end to end of the floor to be directly dropped in pits and spread in thin layers by rakes. Every such layer is then moistened uniformly by the slurry containing ash, dung, earth and fungus starter in small amounts. After the removal of all bedding the floor is swept of all finer portions which are then added to the pit as a surface layer. The top layer is wetted by sprinkled water and soaking is completed by further sprinklings in the evening and next morning. A pit, or a portion of it according to the quantity of waste material available, must be filled to the top in six days. A fresh charge in another portion or pit should then be begun. Trampling while charging is *harmful* as air is excluded.

During the monsoon rains the pits get full of water. When the rains begin the contents should be removed and heaped on ground level taking advantage of the routine turnings. During the rains fresh compost should be made on the ground in heaps 8 feet by 8 feet by 2 feet with vertical sides, and closely grouped together on the broad spaces so that they are protected from cold winds.

8. Turning and Watering of Compost

The surface of the decomposing compost is kept moist by weekly sprinkling of water. It is necessary to restore moisture and air in the interior at intervals and hence 3 turns have to be given, accompanied by watering to make up for lost moisture. In wet weather the quantity of these waterings may be lessened or no water may be

it is a sign that more air is wanted and the pit should therefore be turned and a little ash and dung added.

The quantities required in individual cases can easily be found out by simple calculations with the help of the following data:

12. Quantities Required for 40 Animals

Filling into pits every day for six days:

Bedding and sweepings removed to the pit in one day; 40 to 50 *pals* after scattering on it 4 *tagaris* i.e. sheet iron basins being 18 inches diameter by 6 inches depth, of fungus starter, 15 of urine earth and excess of dung if not used as fuel.

Slurry: For one day's output from cattle-shed 20 kerosene tins (4 gallons) of water, 5 *tagaris* of dung, 1 *tagari* of ash, 1 *tagari* of urine earth, and 2 *tagaris* of fungus starter.

Water: For one day's output from cattle-shed 6 tins immediately after filling, 10 tins in the evening and 6 next morning.

Surface waterings: 25 tins each time.

Water at turning time: 1st turn 60 to 100 tins, 2nd turn 40 to 60 tins, 3rd turn 40 to 80 tins according to season.

Fungus starter at the time of 1st turn: 12 tagaris . . .

TABLE

Volume (in double handfuls) and weights (in lb.) of the contents of a *tagari* or basket.

Material	Volume in double-handfuls	Weight in lb.
Fresh dung	6 to 7	40
Urine earth	20 to 21	22
Wood ashes	15	20
Fungus starter	5	20
For 1st turn starter	6	20

doubtedly better than ordinary farm yard manure, for even by this modified process hard, woody waste can be rotted easily, thus giving a far larger quantity of manure than is produced in existing village practice.

Harijan, 24-8-1935

"At present what is being done is that whenever it is found that a certain article is not being sold in the market, the police, without going into the causes, take indiscriminate action and arrest a few persons here and there for charging prices higher than the maximum or holding up stocks. Although the Committee do not support the action of those who may be holding up stocks and agree that such practice should be checked, they may point out that such indiscriminate action only tends to dislocate trade, and many small dealers consider it better to discontinue trading in the article concerned rather than carry the risk of being thus maltreated."

Then there is unco-ordinated action by various Provincial Governments.

"For instance, in September last, the Government of U.P. fixed the prices of wheat in the Hapur márket without any relation to prices in other centres, and at a level which was low compared to the prices of wheat in other provinces and markets of India, particularly in the Punjab. The result was that, while dealers in other parts of India, e.g. in Calcutta, who had previously contracted for purchases of wheat in the Hapur market at certain rates could not get supplies from the market, large quantities of wheat were attracted to the Punjab market where the prices were higher."

There are other aspects of the matter into which we need not go. To end the anomalies and hardships pointed out above, the Committee have proposed that, if the price control measures are to succeed,

"(1) The maximum fixed by the Government must bear proper relation to the replacement costs; and

(2) The Government must be prepared to sell the articles concerned at those rates — the prices to be fixed after taking into consideration the total cost of production, transit expenses, availability of raw material, wages and other factors, including reasonable profit."

This is an eminently sound proposal, and Government should have no difficulty in giving effect to it. The Committee have made suggestions in this behalf. The

and wheat for internal consumption. But it should be remembered that, against the imports of 14 lakhs of tons of rice from Burma, India's total production of rice was as much as 24 million tons in 1938-39 and 25 million tons in 1939-40. We may add to this the production of other food grains which amounts to nearly 23 million tons. The deficit caused by the cessation of imports thus hardly amounts to nearly 3 per cent of the total supply. Apart from the gap caused by the cessation of imports, the mis-handling of the situation by the Government of India, is, in the main, at the root of the serious position in respect of foodstuffs, which has developed in the market in recent months.

The attempt of the Government to control prices of foodstuffs has proved a complete failure. It is common experience that, far from benefitting the consumer, the recent control of the price of wheat at a maximum of Rs. 4/6 per maund created a regular wheat famine in a number of marketing centres inasmuch as it led to a psychology of panic and hoarding for private consumption. The result has been that wheat is not obtainable at any price in the market. The whole procedure of price control followed by the Government was wrongly conceived and inefficiently executed. They had no machinery for administering distribution of supplies, while whatever private machinery there was, was destroyed by the Government action. If the Government wanted to control the price of wheat, the proper course was to create efficient machinery for purchasing of supplies and distributing the same at cost price. This meant a vast and efficient machinery. That was not set up. The Government announced a maximum price for wheat one morning and then set about the task of searching for supplies. Such amateurish attempt of the Government to control prices without due regard to the machinery of distribution and the cost of replacement, coupled with the terrorizing of the middleman in many places, the restrictions about the method of accounts in provinces like U. P. and the restrictions on the free movement of grain from one place to

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PRICE CONTROL MUDDLE

The contribution in *Harijan* of the 12th inst. by an "experienced friend" on the price control muddle is to be greatly welcomed. A substantial reason why the present price control should be abandoned is that it has benefitted no one, least of all the consumer. The whole question has to be considered afresh from the point of view not only of the manufacturers and distributors but also of the consumers. One very grave result of the price control policy was not only the driving away of the foodstuffs from the market, but of hitting the poor man hard where these foodstuffs were available. The Government announced the controlled price — without much forethought or consultation with the business community — but failed to make the commodity available at that price. If control had to be applied, it should have been applied to all "articles of daily need". It was applied to prices of articles of food but not to the prices of cloth, kerosene, matches, paper, iron and other articles which have gone up by 100 to 300 per cent — hitting the poor agriculturist hardest, who has profited little by the increase in the price of grains. From his point of view, the control of the price of grain is a terrible disadvantage inasmuch as the only commodity he has to deal with is controlled, while he has to pay through the nose for all other articles of daily need.

In this matter as elsewhere the main trouble is an irresponsible Government. An article in *The Economic Journal of the Royal Economic Society* on German price control during the last war throws a flood of light on the whole question, and shows a way out, if the Government will only care to benefit by it. The writer, Leon Zeitlin, says that conclusions from German experience may be drawn "for the benefit of the British efforts to strengthen the economic Home Front, and at the same

partment had set up a considerable number of bodies with special tasks concerning the various industries and trades, and it was these bodies which directed and supervised the semi-official activities of the trade associations."

The writer adds:

> "The Government policy concerning trade associations coincided with their desire to obtain a predominant position in German economic life. The formation of Central Federations of manufacturers, wholesalers, export merchants, retailers and craftsmen was, therefore, encouraged by Government. These Central Federations embraced all associations, corporations and guilds of the respective professions and proved a great help to the Government, because it had then no longer to face the almost unsolvable task of settling the incessant and tedious complaints of individuals or discontented groups. Furthermore, these Central Federations very soon developed into competent and responsible bodies which had to advise the Government in all matters concerning war production and distribution."

This system of enlisting the services of trade associations by changing them into self-governing bodies was "preferable from the point of view of efficiency . . . to the setting up of Committees the members of which are, it is true, most distinguished individuals but not elected representatives of their trades." If this is true in self-governing countries, it is truer still in a dependent country like India where the Government have no relation or responsibility to the people.

The last point is the enactment of legislation against the abuse of economic power. By an Emergency Decree in post-war Germany, "a special Supreme Court was set up with competence to declare null and void agreements detrimental to the common weal, to release members of associations from their obligations, to dissolve associations, to fine associations as well as individuals trying to influence the policy of production, distribution, and prices, etc."

1. knocking out the black market completely,
2. encouraging the 'Grow More Food' tendency,
3. inducing the producer to part with his product, because he knows that he will always get what he needs *at the same rate,*
4. reassuring the consumer as to his future cost of living, and
5. creating a tendency to a uniform and low price of the basic necessities of life.

The revenue necessary to pay the cost of food control on these lines can be created by imposing a progressive tax on all non-rationed and non-controlled articles and highest on luxury articles. Thus the articles of first necessity like food will be subsidized by the purchasers of non-essential and luxury goods.

The proposition can be expressed tersely: the purchaser of goods non-essential to the maintenance of life and health will have to contribute to the costs of collection, transport, storage and distribution of essentials, so that they reach the consumer at the lowest possible price.

MAURICE FRYDMAN

Harijan, 29-9-1946

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CONTROLS

Speaking at the Convocation of the Tata Institute of Social Sciences, the Hon'ble Shri C. Rajagopalachari stated: "Life is now so developed and so complicated that I am fairly convinced that almost all controls will continue to exist in this world." He added that "controls will not be a temporary but a permanent affair." To an ordinary mortal this seems a paradox.

Though the war has been inactive for nearly two years, yet war conditions still prevail in the country in regard to articles of prime necessities. No doubt the scarcity in commodities has called for regulations of some

enter into the market as a seller until the merchants themselves by their actions invite the Government to take drastic steps. The Government stocks will be held in godowns merely as a stand-by, watching to see that the merchants do not advance the price unduly. The moment the market prices tend to go up, the Government godowns will be opened and the stock dumped on the market to bring down the prices. The Government holdings need not be more than 10 to 15 per cent of the stock required to be able to effectively affect the market.

This is not a novel measure. It has been tried out successfully in the working of the Bihar Central Relief Committee under private agencies without the aid of law or other government powers — basing our appeal purely on persuasion. Again, in finance, this is the method adopted by the central banks to regulate interest rates which are but market prices for money. For some unknown reason the Government have not followed this well-tried path but have taken to the King Canute method of fixing prices arbitrarily and by so doing driving the commodities underground. It is not too late even now for the Government to change over and gradually decontrol the commodities as the market assumes normal conditions. We trust our governments will take immediate steps to relieve the distress the people are suffering from because of the present methods of control.

J. C. KUMARAPPA

Harijan, 11-5-1947

Equally alarming is the report sent by the President, North Bengal Rice Mills Association, Dinajpur. The following is its gist:

"The Government of Bengal suddenly reduced the rate of rice from Rs. 11-8-0 to Rs. 9-8-0 per maund in 1945, and when protest was made by the Rice Millers against drastic and sudden reduction, the stock of rice including the entire stock of raw materials of boiled, half-boiled, moist and raw paddy in the possession of Rice Mills was forcibly requisitioned under the garb of D. I. Rules, in order to deprive the Millers of subsequent increase of rate to Rs. 10-8-0 per maund.

"In 1944, the Government of Bengal procured half a crore of maunds of rice from Dinajpur District at Rs. 13-3-0 to Rs. 11-3-0 per maund and sold the same rice in deficit and rationed areas at Rs. 16-0-0 per maund. The Government thus made a net profit of more than one crore of rupees from the procurement of one district alone. With the reduction of rates of rice in rationed area it became the policy of the Government to impose heavy discount or *Batta* up to Rs. 2-0-0 per maund on rice supplied by the Rice Mills. The Government procured 35 lakh maunds of rice in 1945 from the District of Dinajpur alone at the rate of Rs. 9-8-0 to Rs. 10-0-0 per maund and sold the same at Rs. 14-0-0 to Rs. 15-0-0 per maund. It may be noted that the rice on which Government was deducting *Batta* up to Rs. 2-0-0 per maund was also being sold at the same rate of Rs. 14-0-0 to Rs. 15-0-0 per maund. Thus the Government made a profit of not less than fifteen million rupees. Discount or *Batta* on rice is being imposed on various flimsy and vague grounds, viz., undermilling, off-colour, under-polishing, over-boiled, under-boiled, and many more new categories are being invented every week by the ardent and aspiring high officials who get quick promotion by helping the Government to profiteer at the expense of the over-burdened consumers. Government purchases medium rice even at a lower rate than

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AN OPPORTUNITY LOST ?

The staple diet of the British is meat. The war upset all customs and traditions. The most conservative of customs is the menu. Yet the force of circumstances has compelled the British to make drastic changes in the kind of food they eat. Naturally, in a meat-based diet cereals play only a secondary role. Still their Ministry of Food is wide awake to the needs of the nation. Today, the one time fashionable white bread is unprocurable. They had realized the folly of throwing away nutritive parts of food while the nation is experiencing a shortage of foodstuffs. Brown whole meal bread rules the day.

Our country affords a striking contrast to this. Ours is a cereal-based diet in which cereals play the leading role. Masses of our people exist on nothing but rice, wheat and other cereals. Our Ministry of Food is so weak-kneed that even the Government ration shops have only polished rice for the people. Have we not lost a golden opportunity of banning rice mills and thus increasing the nutritive value of the food the masses eat ? Is it too late to act even now ?

J. C. KUMARAPPA

Harijan, 26-10-1947

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A DISMAL PICTURE

A correspondent who knows what he is writing about in a letter addressed to Gandhiji points out that when Government was issuing press notes announcing the first approach of famine, rice was actually being exported from Bengal Ports. Publication of the news that rice was being exported from Calcutta Port in the month of January, 1946 created a great sensation and as a result of pressure

per maund in Dacca and Rs. 45 at Mymensingh, while it costs Rs. 40 to Rs. 30 per maund in other districts. Even in surplus districts rice is being sold for Rs. 20 per maund while previously the normal price of rice was Rs. 4 only per maund. As a record of inefficiency and callous indifference to human suffering this picture is hard to beat. It is bound to arouse widespread indignation. Let us hope that the authorities concerned will allay it by taking prompt and decisive action in respect of the matters complained of.

On the train to Poona, 29-6-'46 PYARELAL

Harijan, 7-7-1946

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WAYS AND MEANS

Ever since Gandhiji has turned his own and public attention to finding out ways and means of averting the food crisis which faces the country, suggestions have been pouring in on him. Many of these he has already embodied in his statements to the press and articles in the *Harijan*. Here are some more that merit the attention of the authorities where the remedy lies in their hands, and of the general public so far as practical co-operation on their part is concerned.

1. Lakhs of acres of fertile black cotton soil—4 lakhs in Guntur, 6 lakhs in Krishna and Godavari districts, 10 lakhs in the Circars, 20 lakhs in other parts — are being used for the growing of Virginia tobacco. Inasmuch as tobacco and its use is to be condemned as harmful for man, it is a golden opportunity for the owners of these lands to give up its cultivation or restrict it and devote these fertile areas to growing food and fodder crops.

2. The shelled and dried cocoanut, commonly known as *copra* is extensively used for commercial purposes for manufacturing toilet articles such as cocoanut and other scented oils, soaps, etc. . *Copra* may be preserved for a long time without any difficulty and may be used as a

for cattle as for men and substitution for cattle of more green fodder in the shape of *shattala, sarson,* green vegetables and grass.

8. The manufacture of cakes, biscuits, pastries, fancy breads, sweetmeats, etc. in hotels and restaurants is a matter that needs investigation and curtailment.

9. Ceremonial feasts and parties must be stopped.

10. The question of rice has already been touched on by Shri Pyarelal but bears repetition. A correspondent from Dinajpur writes that 30,000 maunds of broken rice are lying and being wasted in the mills there. It may not be sold in the market, whereas, if released, it could feed thousands of hungry mouths. The writer suggests that an inquiry should be held to reveal how much rice Bengal produces, how much is purchased by Government from the mills and what use is made of it, how much broken rice is lying all over the province and whether Government will allow this to be handed over to a food distribution committee specially appointed for the purpose.

11. Professor Ranga fears that while every effort has been made to assure rations of food to the urban people, very little, if any, thought has been given to assure similar rations for the rural areas. He suggests :

(a) Sufficient remuneration to the peasant for food crops so as to wean him from cultivating commercial crops. The peasant is being starved of clothing, kerosene oil, fuel and other oils. Remunerative prices for foodgrains without the mediation of middlemen would alleviate his distress. Consumers' goods should be made available to him on a system of rationing and a systematic and equitable exchange of agricultural produce for these should be worked out and enforced.

(b) Adequate supply to him at reasonable rates of agricultural implements.

(c) Healthy competition between householders, *kisans* and villagers as to the maximum per capita production and minimum per capita consumption. Those

(m) Wastage of water must be stopped and wells sunk wherever needed. Repairs of existing tanks and wells should be the duty of the Government.

(n) Forest and other green leaf manure has to be gathered, conserved and transported where required. Freight rates for such transportation should be lowered. The supply of manure to *kisans* is an important one and should be given to *panchayats* or *kisan* organizations for equitable distribution.

(o) Cultivation of root crops which can be raised three or four times in the year should be encouraged.

(p) Paddy must be husked by hand and thus the quantity of rice can be increased by at least 10 per cent.

(q) If provincial and district authorities were to take up the task of allowing their grain and pulses to germinate in the scientific manner it may be possible to increase the total quantity of nourishment that can be got of foodgrains by 15 to 25 per cent.

12. Cattle rearing must be encouraged. A friend from Guntur writes that while his is a district famous for good milch cattle such as the Ongole cow, good breeds are being exported daily for military and slaughter purposes.

13. The use of the military, in particular those who are being now demobilized, has been recommended for various types of service in the present crisis. A correspondent says that there is a wide and fertile rice growing valley running from Kalyan to Karjat. Thousands of acres of good land bordering ample water flowing into the sea lies uncultivated from November to June. The water could easily be canalized or wells dug further afield. Obviously rice growers are too poor to do this, but if crops can be grown without detriment to the paddy, why should not Government put several regiments of Indian engineers or other troops on to this task ? This is probably applicable to many other portions of this vast land.

14. Finally, there is the usual and universal complaint against hoarding and black-marketing. The best way to eliminate the black market is for the rich to

should not the consumer have paddy which he can himself easily convert into rice by hand-pounding? Apart from physical and material gain this would also afford bran for his cattle. The friend therefore suggests the following remedies:

(a) Paddy to be stocked in godowns in the villages. After enough has been stocked for local needs the remainder may be sent direct to where it is needed.

(b) Ration to be distributed in the form of paddy.

(c) Paddy to be distributed at cost price. Cost of procurement and distribution to be subsidized by the Government.

(d) Ration to be doubled in the case of agricultural labourers or any labourers doing hard manual labour.

2. A friend from Bengal suggests that jute growing should be curtailed to meet local needs. It absorbs a great area of cultivable land which should be used for staple foods.

3. Another friend writes that there is a great deal of grain stocked in some of the States. After meeting local needs they should be asked to co-operate with British India and send the surplus to needy places. A strict watch should be kept so that grain stuffs wherever stocked may not be lost by rotting nor used for profiteering.

4. Every help should be afforded to poor agriculturists in the matter of implements of agriculture. To improve these and supply them at cheap rates to farmers is the duty of the State.

5. A Punjab friend writes that price control, instead of helping the poor man is helping to raise prices and create a black market. He says that *gram* in the Punjab bazars today is selling at Rs. 18/- per maund and that too is available through dubious channels. If control were removed, the price would come down. There is plenty of wheat in the Punjab which is getting black and there is adulteration of flour which is hard to get even at Rs. 13/- or 14/- per maund.

but they must not be expected to produce ploughs. They must be provided with these materials. The army has to be directed by those who know their job. Unfortunately, however, the direction at the centre is exceedingly weak, and wholly without vision. It is good that the Viceroy has taken the matter in his hands, but the Executive which has to handle this vast problem has not yet been organized. The problem in terms of arithmetic is something as follows:

"Our total production of cereals is 60 million tons per annum, out of which 18 millions come in the market. The official estimate of the deficit is 6 million tons —or a third of the entire quantity of grain, which is marketed throughout a year—an enormous quantity to deal with in terms of transport alone. The problem is of an alarming magnitude; if it is considered that the principal areas requiring immediate help are South Bombay, and the entire Madras Presidency, including Mysore and Travancore. There is a possibility of getting 3 to 4 million tons of grains from abroad, but it would be quite impossible to handle even a quarter of these imports at our ports at the West and South-East coasts. There is neither storage nor facilities for handling the traffic at the ports, or on the rail-road. There is a very considerable danger of people starving, and grain rotting at the ports, or lying unloaded in the ships, simply because the problem has not been worked out in detail. A fully loaded goods train means only 50 wagons, and a train load of 1,000 tons at a time. The time for loading such a goods train is anything upto 3 to 5 days, *if the necessary siding and labour are available.* Add to this the time required for unloading and transit between two points, and you get the measure of the time lag. If we receive three million tons of imports, it would mean 3,000 special goods trains; at least half of them during the first 150 days or 10 per day— quite an impossible feat even under the best of circumstances. How on earth are we going to manage this with the limiting factor of the Western ports, and the

THE UTILITY OF THE GROUNDNUT

The following is the essence of Dr. A. T. W. Simeons' long article on the groundnut.

He opines that the low stamina of our people is primarily due to lack of protein, vitamins and salts in our diet. During the Bengal famine it was proved that the life of the victim of starvation depended more on administering protein than on starch. He maintains that if more protein could be provided, the net result on the national nutritional value would be infinitely better than of more cereals. Groundnut flour contains over 50 per cent protein and is richer in it than any other known vegetable substance and very edible. An acre of groundnuts can produce many times the quantity of protein than an acre of wheat, millet or rice. And yet we are not making full use of it. 45 per cent of the groundnut crop is taken for the production of oil. "What happens to the remaining 55 per cent? If we can eat whole nuts, why can not we eat them minus the oil? The economist answers, 'because we need the oilcake for feeding our cattle and for manuring our sugarcane and rice fields.'" Dr. Simeons argues that to use an edible protein for this purpose is criminal waste when we have inedible substances like dung, night-soil or guano to enrich our fields. "If we fertilize a sugarcane field with groundnut cake, every grain of protein we plough into the earth is lost; because sugar contains no protein at all — not to mention the loss of 10 per cent of residual oil in the cake, the vitamins and salts.... We feed oil-cake to our milking cattle. The milk output increases and milk is an excellent food, but if we feed a cow 10 lb. of nut protein, it is doubtful if this will produce even ½ lb. of milk protein. Is it worth it when we can achieve about the same result with cotton-seed and other inedible products?"

"India is estimated to produce about 1½ million tons of groundnut. Thus, 7 lakhs of tons of the finest food can be made available from this crop." The protein value would be equivalent to 3500 crores of eggs or 1000 crores of seers of milk or 350 lakhs of sheep. The annual loss of starch, fat, minerals, and vitamins is in addition and all due to the wrong use of this valuable nut."

New Delhi, 24-6-'46

A. K.

Harijan, 30-6-1946

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USEFUL SUGGESTION

Dr. M. A. Chadray sends the following:

The method now in vogue of first grinding grain into flour and then making *chapatis* or bread out of the flour is wasteful. The defects of the method are as follows:

In the process of grinding in mills at a high speed, the properties of protein, starch, cellulose and mineral salts are altered while the fat content is lost, as in the process the flour gets hot. In the preparation of dough of workable consistency, the flour absorbs only half the quantity of water to its own weight, with the result that starch does not swell and in turn makes the food only partly nutritive due to insufficient proportion of water. In the East, the dough is rolled into shapes called *chapatis* and *puris* which can either be cooked or baked, but are fried with ghee or oils, and in so doing only a skin forms on both the sides. In the West, the dough is mixed with yeast for the preparation of spongy bread, but this too is neither fully nutritive nor hygienic as claimed, as the vitamins together with other constituents of food value are destroyed by the alcoholic fermentation due to the action of yeast. Hence, the food prepared with this age-old process is neither tasteful nor hygienic, nor fully nutritive nor easily digestible

When wheat is cooked completely, which can be seen either from its swollen state or by pressing between the fingers to determine the softness, a little salt may be mixed with it to impart taste.

Wheat so cooked should then be masticated or ground to a paste, which can be accomplished with the aid of mincers, or by grinding on a masala stone or by pressing with two wooden pieces. With the use of pressure cooker, wheat inside will be digested to a pulpy dough of workable consistency. The paste so made can be made into shapes like *puris, chapatis* and biscuits by the known method and fried with known fats or oils, for consumption.

In places like Bombay, where at times grain cannot be had but only flour, one may first make a dough of the flour as usual when making *chapatis*, put the dough in a piece of cloth and hang it over a pot of boiling water till the dough gets completely cooked with the steam. *Chapatis* should then be made out of the cooked dough, following the usual process.

The advantage of this new food is that by it about fiftyfive per cent wheat is saved — forty per cent by the absorption of about one and threequarter times water, ten per cent by retaining bran, and five per cent by elimination of wastage. This means that a month's provision will last for two months. Actually, with this process, the volume of wheat increases to two and a half times, i.e. one pot on cooking becomes two and a half pots. This means that from a quantity of flour required to make four *chapatis* with the old process, ten *chapatis* can be made from the same weight of wheat with this process, without altering the thickness and size.

Besides, the food is more tasteful, hygienic, nutritive and easily digestible as the known and unknown constituents of food value are retained and evenly distributed. As such, its consumption will add a marked amount of weight. Moreover, being easily digestible, it can be fed even to sick persons. Also, the process will

etc. should make a drive for the observance of the Saturday evening fast. The sharing by the Indian population of the starvation which is descending on parts of the country will mean in fact sharing of food.

Thus that starvation can be staved off. Besides, those who observe the fast, will in most cases gain in health.

Even if the drive achieves only a 10 per cent success, the grain saved would be 92,000 tons — substantially more than the quantity promised from Indonesia. These 92,000 tons would have been obtained at no cost to the nation, and would represent (on the other hand) saving not only in food but in expenditure by individual families.

(From the *Daily Mail Bag*)

Harijan, 18-8-1946

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SAVING CEREALS

In view of the present cereal shortage in the country, certain experiments on diet were tried in Maganwadi. The following results which have been tested at Maganwadi will be helpful to save cereal consumption to some extent.

Rationing authorities in certain places are distributing *atta* instead of cereals and as the cereals employed are of lower quality there is a suggestion of adding calcium salt to the *atta* to make it more nutritious. We would suggest an addition to the *atta* of 15 per cent of cleaned groundnut cake. This will have many advantages:

1. There will be an outright saving of 15 per cent in cereals.

2. The protein content of the *atta* will be practically doubled.

3. There will be no increase in the cost; if anything it may scale down the cost.

4. The groundnut cake is very rich in vitamin B complex, particularly in vitamin B_1.

There is no danger of the cake powder getting rancid as in the proportion in which it will be present in the

the preparation of *dalia* or porridge with cereals half and half or éven without that.

Such use of groundnut cake will release some of the cereal needed and will be a very good health-giving food.

Sweet Potatoes: Sweet potatoes are rich in starch and can form a good substitute for cereals. These should be cooked over steam. If cooked with water almost all the water should be allowed to evaporate, for, otherwise much of the mineral salts will get dissolved in the water and would have to be discarded with the water.

Sweet potatoes can be taken mixed with vegetables, milk, curds or in any other convenient form. If at any of the meals, cereals are to be totally substituted by this, a little more of sweet potatoes should be taken on the weight of the usual consumption quantity of cereal.

DEVENDRA KUMAR GUPTA (A. I. V. I. A.)

Harijan, 6-4-1947

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MILK SWEETS

A correspondent writes:

"You know the position of milk in India. Here at Jamshedpur the population is about two and a half lakhs. Even if two and a half *chhataks* of milk were given to every one, there will be a daily consumption of 1000 maunds. Against this the Tisco dairy is producing 30 maunds of milk per day and we another 3. How much watered milk is supplied by the *gawalas* from door to door we do not know. But we do know that while the babies and expectant mothers and the sick are not getting milk to drink, about 50 maunds of milk is being daily used by the *halwais* for making sweets. Should *rasgullas, pendas* and similar luxuries be given preference over feeding bottles?"

Gandhiji has times without number cried himself hoarse over the question. In times like these it is criminal to waste a single morsel of food. Eating sweets is

general public when presiding the other day over the annual general meeting of the Agri-Horticultural Society.

(a) To convert the Malabar Hill Slopes, with the exception of the Hanging Gardens at the top, from the Bombay Garage to Kemp's Corner, into vegetable gardens. This space could easily supply vegetables to a thousand persons,

(b) to use all house terraces with the help of modern methods for small scale cultivation of vegetables like tomatoes and greens.

(c) to convert by chemical means the City's refuse into manure,

(d) to encourage in children the healthy pastime of cultivating fruit plants, vegetables and cereals, both in school and at home, and thus early instil into them a sense of social service.

She rightly says that a vegetable garden, if laid out properly, can be a thing of beauty. The society is willing to give expert advice if needed.

* * *

A correspondent welcomes Gandhiji's suggestion of more raw vegetables and occasional complete or partial fasts. Simple diet plus *yogic* exercises will make many people lose their superfluous fat and improve their digestion. Most of the well-to-do man's maladies are due to wrong diet or overeating, both of which handicaps can easily be overcome by wise restriction in these difficult times.

* * *

Goat's milk can be produced very cheaply. In several large families there is enough food material thrown away daily, like peelings and the coarser parts of vegetables etc. to feed at least one goat.

In a country like ours where pasture lands today are unavailable and a very small percentage of farmers is able to keep milch cattle, it is the milk goat which must become the poor man's cow.

food resources in the country. A friend who had good experience of agriculture and *kisans* was telling us the other day that practically 1/8th of the wheat stored by *kisans* goes to waste because of improper storage. That should be remedied without delay, and it is for medical research workers to suggest simple and efficient methods to do so. They can work out austerity meals, suggest menus giving a balanced diet and at the same time economize as much food as possible. The Nutrition Research Laboratories, Coonoor, have rendered useful service in the past by making the intelligentsia of the country food conscious. It is for them now to help the masses. Then and then alone can the heavy annual budget of such research work be justified. The money spent on the research comes from the pockets of the poor and the research workers must see that they do not die of preventable starvation.

S. N.

[The more I study the food crisis the more convinced I feel that people are being starved not for want of food, but for want of the co-operative effort of the expert and a national Government at the Centre bent upon meeting the crisis and inspiring the masses with confidence.

New Delhi, 20-4-'46 M. K. G.]

Harijan, 5-5-19

factories is estimated to be in the neighbourhood of 1,32,000 tons a year. The percentage of "Sizing" or "Size" depends on the counts of yarn used, the quality of textile material manufactured, the price at which it is marketed and particularly the whims and fancies of the manufacturers. The cheaper varieties of textiles are given very heavy sizing to fetch better prices, the burden of which ultimately falls on the lower class who go in for cheap consumer goods. To manufacture 1,32,000 tons of sizing products, 70,200 tons of starch or dextrine are necessary on a 60 per cent basis every year, which in turn consumes double the raw materials. In other words, yearly 1,40,400 tons of foodstuffs mentioned above are used up in the manufacture of sizing products. Here in India, starch is made of all essenital foodstuffs given above and the starch contents range between 30 to 60 per cent of the raw materials. But for our calculations, I have taken an average of 50 per cent.

2. IN MANUFACTURING GUMS OR PASTES. Though the statistics are not available, the flour of wheat and rice, and tapioca powder used in manufacturing gums, pastes etc. for various purposes including sticking or affixing etc. can be estimated at about 1,500 tons a year from 2000 tons of raw materials (foodstuffs).

3. IN REDUCING THE STRENGTH OF DYESTUFFS. Use of dextrine as a rducing agent in the "Dyes" or "Colours" trade is a well-known fact. As far as I could gather, the consumption of the reducing agent in various provinces is approximately 5,500 tons, Bombay Province leading the list with 2,500 tons. These figures I fear may be on the lower side as I could not get accurate consumption. The necessary data can only be collected by the Government machinery.

"Reducing dyestuffs for the bazar consumers is a common practice with all leading firms like Imperial Chemical Industries, Ciba (India) Ltd., Shaw Wallace,

"So also points 2 and 3 can be controlled by offering suitable substitutes or at least prohibiting the use of all these in colour-reducing by colour importers, mixers and packers. Here again there is corruption on one side and duping the consumers on the other. Colours which may normally cost Rs. 3 to 6 are even sold at a higher if not the same price after reducing the strength by 50 per cent by the addition of dextrine, thus deriving over 100 per cent profit."

This enormous use of huge quantities of grains and roots etc. can either be prohibited forthwith or at least restricted to a very great extent, thus making a considerable quantity available for human consumption. This step, it is suggested, would not in the least affect or paralyze the textile industry or the colour trade as suitable substitute in the form of coffee-dextrine, tamarind-starch, mango-seed-starch, and a score of other forest products can take its place. At present hundreds of tons of tamarind seeds are being exported to foreign countries.

An Unwelcome Intruder

Even more startling are the facts about the spread of tobacco cultivation at the expense of food crops, to which a correspondent from Gujarat has drawn attention. The following is the gist of his letter :

"While on the one hand you are asking people to dig up flower gardens to grow vegetables and food grains and to sink more wells and repair old ones for cultivation, lakhs of acres of land are being used for growing tobacco, which not only has no food value but is positively harmful to health. Thus tube wells and oil engines and quantities of crude oil which could serve to grow more food to alleviate famine are being used for growing tobacco for the black market.

"In 1942 the British Government imposed a tax of as. 9/- per lb. or Rs. 23/- per maund on tobacco and with a view to obtain the maximum revenue from it encouraged the cultivation of tobacco. This has resulted in an enormous increase of the acreage under tobacco.

that a food crop will yield about Rs. 80/- per acre. The money crop cultivator has thus an advantage apparently of about Rs. 70/- per acre. It was then proposed that a subsidy of Rs. 70/- per acre should be given to the cultivator of tobacco on the basis of acreage as shown in the cultivation accounts for the current *fasal*

"There are vested interests in tobacco and to minimize the damage caused to them by total prohibition it was also suggested at the time that 50 per cent of area might be converted into foodcrops this year and the other half might be switched over to food crops next year.

"The Director of Agriculture speaking at Bapatla the other day hinted that Government contemplated measures to check tobacco cultivation.

"The extent of 1,40,000 acres above referred to, is exclusive of the extent on which Virginia seedlings are grown; such seedlings are grown on about 1000 acres of land in this district. That extent also will be available for foodcrops.

"It is unnecessary to dilate upon the evil effects of tobacco. It affords neither food nor drink to any man or beast or bird.

"This tobacco is an all India question and concerted action should be taken by all the provinces and states. The matter may be considered by the Working Committee and a definite lead may be given to the whole country."

There can be no question as to the desirability of prohibiting by law the raising of this most exhausting of money crops at a time when dire famine threatens the land. The proposal about paying compensation to tobacco growers, however, is preposterous and can arise only in a capitalistic order that has made money its God. Vested interests can have no claim on famine and starvation. Cultivation like other production should primarily be for use. The invasion of our economy by 'money crops' has become a national menace. In a well ordered society land

"The provincial governments have also to make necessary arrangements for transport of the vegetables to the railway stations or nearby markets for further disposal. This can be done exactly as was being done during the war period for the supply of vegetables to the army camps. The lease lend lorries given to many contractors could be put into commission at a reasonably fixed rate; (this is one of the conditions of the issue of these lorries to the contractors). The existence of a service road along every canal, its branches and distributaries will be usefully employed by these lorries and no further charges have to be borne for making any new roads etc. Of course the road has to be maintained which also can be easily done through the farmer who would be willing to look after that length of the road which comes in his jurisdiction.

"There is no article of food so quickly grown as vegetables. If the Government could only organize it, it would not be difficult to dehydrate (by sunshine only) most of the vegetables."

Army to the Rescue

The other suggestion is from a British army man. He writes in a letter to Gandhiji:

"It is with concern and regret that I find the Indian people have now to face yet another famine. I have followed this matter in the press and read your published letter of 21st February to Mr. G. E. B. Abell, Private Secretary to the Viceroy.

"The Indian Army should certainly be used as you suggest, and I also think both the British and Indian Army and Air Force should start growing food in cantonments and all other permanent stations and camps. There is ground that can be set aside for this purpose, there is the labour and there is usually a fairly plentiful water supply at such places. The Army in Britain was called upon to do this during th war and the present position in India warrants that similar steps be taken in India now.

areas are the N. W. F. P., Bihar, U. P., Madras, Bombay, Bengal, the States of Travancore and Cochin all of which have to import either wheat, rice, millet or all.

The production vs. requirements of foodstuffs annually is as follows :

Foodstuff	Production million tons	Requirement million tons	Deficit million tons
Cereals	50	60	10
Pulses	7	12	5
Vegetables & Fruits	Unassessed	At least double	..
Fish	0.6	9	8.4
Milk	22	35	13
Eggs	2660	146000	143340 (No.)

The following is a table of balanced diet for the maintenance of proper health :

Cereals	14 ozs.
Pulses	3 ,,
Green leafy vegetable	3 ,,
Root vegetable	3 ,,
Other vegetables	3 ,,
Fruits	3 ,,
Milk	10 ,,
Sugar and jaggery	2 ,,
Vegetable oil, ghee etc.	2 ,,
Fish and meat	3 ,,
Egg	1 only

This diet yields about 2600 calories.

The adult Indian male requires	2600 calories
Female	2100 ,,
Child 12 & 13 years	2100 ,,
,, 10 & 11 ,,	1800 ,,
,, 8 & 9 ,,	1600 ,,
,, 6 & 7 ,,	1300 ,,
,, 4 & 5 ,,	1000 ,,
Pregnant woman	2400 ,,
Nursing mother	3000 ,,

"Place any other country under the same condition, with crippled industries, with agriculture subject to a heavy and uncertain Land Tax and with financial arrangements requiring one half of the revenue to be annually remitted out of the country, and the most prosperous nation on earth will soon know the horrors of famine," said R. C. Dutt years ago.

Too long has India groaned under the cruel foreign yoke. Mr. Winston Churchill and those of his ilk who talk pious platitudes about their concern for the minorities of India, should read these figures and pause before they dare to play the role of hypocrites. Not until our people are able to get enough to eat, can all our schemes for proper housing or roads or even education and health be of any real avail. Adequate and proper diet is the first requirement of man and to this end the energy of all Provincial Governments must be diverted forthwith if we are to live.

Poona, 1-8-'46 A. K.

Harijan, 8-9-1946

The figures for wheat are :

Japan	2010 lb.
Italy	1374 ,,
Canada	1197 ,,
England	2085 ,,
India	774 ,,

5. Government statements further indicate that owing to lack of proper storage facilities, the annual loss of food grains due to the inroads of rats, insect pests etc. comes to about 10 lakhs of tons per year.

6. The extent of cultivable land which is at present not under cultivation is 9 crore acres.

7. Lastly comes the invasion of 'money crops'. In 1900 the area under commercial crops was 165 lakh acres. In 1930 the figures rose to 240 lakh acres. During this period the land under oil-seeds increased from 130 lakhs acres to 160 lakh acres. In 1942, 32 per cent of the entire yield of oil-seeds and jute was for export, of linseed 71 per cent and of groundnuts 15 per cent. In other words, so much soil fertility was bartered away for commercial gain, without the possibility of returning in any shape or form to the soil what was taken out of the soil, thus impairing it permanently. This is not agriculture but downright robbery of the soil at the cost of posterity. If our agriculture could be rescued from the invasion of 'money crops' it would go a long way towards meeting the recurring threat of food shortage.

New Delhi, 7-9-'46

PYARELAL

Harijan, 22-9-1946

His other suggestions include brick and cement lining for canals to reclaim thousands of acres of land that have become decadent owing to water logging and excessive salinity resulting from seepage, also checking the evil of excessive fragmentation of land which is strangulating cultivation in many parts on the one hand and consolidation of uneconomical holdings, power irrigation and so on.

Sodepur, 30-10-'46 Pyarelal

Harijan, 17-11-1946

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WANTED CORN, NOT CURRENCY

Businessmen say that agriculture is not a profitable avocation in India. But, since life depends upon agriculture, where agriculture is not profitable, life itself cannot be profitable. This result is not, cannot be, natural; it is the result of an artificial civilization. Currency is the symbol of this artificiality. The false prestige given to the possession of currency has become the cause of the destruction of so much life.

The people of India live in *khedas*—fields (remember that one of the synonyms for 'village' in several Indian languages is *kheda*, which also means a field). If we can undo in the *khedas* the false importance given to currency, agriculture cannot but improve. The importance given to the possession of currency is the cause of the frenzy for raising 'money-crops'. Why are so much tobacco, a considerable part of cotton and similar other crops raised? Why should there be so much need for currency? Because, the villager has to obtain all his wants by purchase. He must bring his cloth and the oil-cake and several other necessaries from the market; hence his need for money. Hence he raises crops not needed by him or his comrades in the village, but those wanted by a far away exporter or industrialist. And so, food is scarce. The village itself has no industries of its own. The villager cannot supply himself with his essential

vegetables, and puts them up for sale! He says that he cannot afford to consume them himself! Why should it be so? My answer is — for want of village industries. Possibly some people may feel that I am obsessed by this idea. But as long as I have not been given any other explanation for it, I must adhere to this view.

Pavnar, 13-1-'47 VINOBA

(Translated from the original in Marathi)

Harijan, 16-2-1947

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THE FOOD SITUATION

At the last conference of Food Officials at Delhi it was stated that the next rice crop will yield only about 83 per cent. The shortage is therefore considerable, though the situation may be ameliorated in some parts of the country where the rains are good. In any case, the food situation in the country is one which requires careful attention. India is importing thousands of tons of food from abroad. This is a reflection on an agricultural country. No country that aims at being independent can attain that position as long as that country is dependent on other countries for its primary necessities. We have, therefore, to put forth our best efforts to make India self-sufficient in food.

One of the striking features of the British landscape today is the appearance of vegetable patches wherever land can be utilized for that purpose. In addition to this they are hoping to bring in hundreds of thousands of acreage under fresh cultivation. Cannot the Ministry of Food in our country follow this good example and ban money crops for industrial purposes and give priority for food crops to such lands as are under industrial exploitation today? This can be done if there is a will to feed the population by its own effort. It may require controlling of the use of land and may lead even to licensing of land for particular crops.

FOR THE ATTENTION OF GOVERNMENT

A correspondent from Chittoor writes to Gandhiji in a letter:

"The rate of interest charged by the Government on loans granted to the agriculturists under the Land Improvements Loans Act and the Agricultural Improvements Loans Act is at present 5½ per cent whereas the Government is able to get money in the open market from 2 to 2¾ per cent of interest. This is a central subject. The Government of India can give all necessary loans free of interest or at least at 2½ per cent of interest."

Mussooree, 7-6-'46

Fallow and Cultivable Lands

Shri V. N. Khanolkar from Bombay writes:

"British India agricultural statistics 1941-42, published by the Government of India (1945) gives sufficient food for thought to our Ministers who are trying their best to resolve the acute food problem.

"The position as it stands today is not likely to have undergone a big change on account of the Grow More Food campaign and the figures quoted below may be taken as sufficiently representing the present state of affairs in the country.

"The total area left fallow during the year is 4,71,50,000 acres, while the net area actually sown is 21,32,90,000 acres. The percentage of the fallow area to the net area sown in British India is 22 per cent while the corresponding percentage for the various provinces are:

Ajmer Merwara	65%	Delhi	9%
Assam	30%	Madras	31%
Bengal	18%	N. W. F. P.	19%
Bihar	38%	Orissa	30%
Bombay	17%	Punjab	11%
C. P. & Berar	14%	Sind	111%
Coorg	100%	United Provinces	8%

Here is a thing for the popular ministries to take up at once. They need not wait for the establishment of a national government at the Centre.

New Delhi, 15-6-'46 PYARELAL

Harijan, 23-6-1946

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RYOTS OR TENANTS

Many of the popular ministries have been attempting to regulate the relationship of the zamindar and the cultivator. Generally speaking, the zamindars are merely rentiers or absentee landlords. They have no immediate contact with the land, neither do they concern themselves with the actual cultivation of crops. The methods suggested to habilitate the cultivating farmer on his own land has often taken the form of either the Government buying the land, compensating the zamindar and giving it to the cultivating ryot, or confiscation to the State of large estates and splitting them up into small private holdings.

It seems to us that it is not necessary in the first instance to confiscate the land nor would it seem essential to compensate the zamindar. The course which should be adopted would seem to be to place the cultivable lands in the villages to whomsoever they may belong under a system of balanced cultivation by which the requirements of the village for a balanced diet and other primary necessities will be produced in the required quantities. Under this scheme the land will be licensed for growing the products that are necessary to ensure the needs of a group of villages with a population of about 50,000. Such lands when licensed should be cultivated by the actual owner. If any of the lands so licensed remain uncultivated for a period of 2 to 3 years without adequate reason, such lands should revert to the State and the State can then redistribute those lands amongst the villagers who are willing to utilize the land to produce commodities according to plan for balanced cultivation.

We must pull ourselves together, and stop sliding down this slope of degeneration. Everyone can help, from the private individual to the huge Government machine:

1. The people who have not got even an inch of land, can collect together old broken pots, pans and boxes, put a little earth in them, and raise salads and vegetables.

2. The owners of bungalows and houses can supply the city and town markets throughout India with green vegetables, roots, potatoes, pumpkins, marrows and the like, at reasonable rates.

3. The municipalities can augment this supply (adding grain crops where the land is sufficient) through the cultivation of public gardens, parks etc.

4. The Governments can aid the villagers far more effectively than they are doing at present, in the better development of already cultivated land.

These are no new suggestions, but except in a few rare cases, they have been quietly slept over, while the country has been passing through an ever worsening food crisis!

We suffer deplorably from big schemes and little field-work, big talk and little action. What I have suggested above needs no big outlay in money or equipment. It needs *active human interest.* No schemes, however heavily financed, will succeed without this vital force, and any scheme, even if devoid of financial aid, will do wonders if that force is present.

Just see how simple it will be if that *active human interest* is awakened.

1. The landless folks will be producing and eating, within a few days, crisp, health-giving mustard salads, and within a few weeks their verandahs and roofs will be edged and festooned with attractive vegetable bearing plants and creepers.

2. The owners of bungalows will discuss matters with their *malis*, and the local Agriculture Department Officers. They will then supply their *malis* with the necessary seeds and manures, and will themselves give

spending the money already at their disposal, in the right way, without the delays, and wastes and wrong approaches at present prevailing. The drawing up of development schemes which is at present going on at the Centre and in the Provinces, is putting the cart before the horse. The first scheme, which has to be thought out and put into action, is the creation of administrative machinery which will be able successfully to implement the Development schemes. Everywhere in the Government circles I find the admission that the machine is bad, but because of the nature of the problem, everyone tries to evade the fact that revolutionary changes need to be carried out. To talk of big schemes without openly facing up to this fact, is to hoodwink the public.

Therefore, I say, to develop the food-growing resources of the country through Government agency, we must at once and completely readjust the administrative machinery. Through that achievement all else will grow and flourish, with less cost and increased production.

New Delhi, 23-10-'47 MIRABEHN

Harijan, 2-11-1947

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HOW TO GROW MORE FOOD

II

For those who have taken interest in what I wrote last week, I am giving this week, a few practical hints and suggestions. The season is advanced and no time should be lost, so those of you who mean business should already be digging the soil. I address first the private individuals. After the soil has been dug (once, if cultivated soil, twice — once each way — if new ground) the clods of earth should not be broken up and smoothed out. The soil should be left just as it is, all lumpy, so that the sun and the air can penetrate under the surface. In

heavily watered at longer intervals. When the little carrots come up, if they are very dense in any part of the plot, they may be thinned out, otherwise their roots will not have space to swell and grow freely.

2. Turnips: The beds can be prepared the same as for carrots, but instead of sowing broadcast, the seeds should be lightly placed about ¼ of an inch below the ground and covered over (the soil should not be pressed down) at an all round distance of about 5" from one another. Watering will be the same as for carrots. Here, of course, no thinning will be required.

3. Radishes: These should be sown in the same way as turnips. But they are best sown on ridges, the banks around the edges of the plots in which the other vegetables are grown can, therefore, be utilized. Take care to water the ridges also with the watering pot, and when the watering is done by flooding, the water should be sufficient to soak the banks properly.

4. Spinach: This should be sown broadcast like carrots. The sowing should be as even as possible and closer than carrots. No thinning need be done. It should be kept well watered, and three to four cuttings may be obtained from the same crop.

All this should not alarm you, as being difficult. On the contrary, it is most fascinating. Much more fascinating and health-giving than sitting in an office or working in a factory! How much richer life becomes when we associate with Nature! If we will but approach her with a loving heart, we find her ever ready to respond. So much so, that even with half an inch of earth in an old *thali* she will give us salads in a few days!

I will explain this in more detail.

Take any broad, shallow vessel — a *thali* or tray — and spread in it half an inch of finely powdered soil. Then flood it with water, and shake the vessel gently so that the watery earth settles down perfectly level. Immediately sow in it *sarson* or *rai* (mustards), so thickly that seeds are practically touching one another, but not overlapping. Keep the vessel in a temperate

layed, because digging must begin at once. You must also have meetings of your citizens, and call upon them to lend a free hand in this urgent national work.

To the Governments I would say :

Though the remodelling of the administration machinery is essential before the successful development of any schemes, day-to-day efforts must be made to put the existing machinery to better use. The Government Seed Stores should be looked into. There should be frequent and surprise tours of inspection, and every effort should be made to see that the seed supplied by the Stores is of the kind the *kisans* need, that it is of good quality and that it is tested properly before being distributed. I have had shocking experiences of these Stores. There should be a nation-wide drive for compost making. Today, the outskirts of villages are covered with disorderly rubbish heaps and the village lanes themselves are all littered with rubbish. If the Agricultural Departments made a concentrated drive for teaching the villagers how to turn all this rubbish into valuable compost, it would not only result in a substantial increase of the crops, but it would at the same time clean up the villages and reduce disease.

I reproduce below an appeal I have addressed to *kisans* in U. P. in the form of a little pamphlet regarding compost making.

" Brother Kisans,

We do not treat our Mother Earth properly. She does her best to feed us all, but we do not feed her in return. How can she sustain us, her children, if we do not serve her as dutiful children should serve a revered Mother? Year after year we plough, sow and reap harvests from the fields, but very rarely do we give any manure to the soil, and even what we give is usually half-*kachcha* rubbish. Just as we need well-cooked food, so does the soil need well-prepared manure.

Unfortunately half the cattle-dung in our villages is used for fuel. To prevent this loss of manure for the

and finally leaves four feet open at the opposite end. While carrying out this operation we will take care thoroughly to mix up the layers and break up any solid lumps. We will then pour plenty of water on it, cover it up again with earth, and leave it for another 7 or 8 weeks. When we open it up at the end of this time we shall find good, well-mixed and rotted manure. This is given the special name of Compost. There are various methods. Most of them are rather complicated. The method I have described is the method I employ in the Kisan Ashram. It is quite simple work and, therefore, possible for all of us to do. I have given it the name of Kisan Compost.

You can see from the above description that Kisan Compost needs turning only once, and takes not more than 3 to 4 months to ripen. The breadth and length of the pits can be increased if necessary. The rotting process is hastened if a sprinkling of old compost is added at the time of spreading the fresh layers. Ash, finely sprinkled, is also helpful. Thick or hard matter like *bajri* stalks, sugar-cane refuse, etc. should not be put straight into the compost. It should either be soaked in water until rotted, or burnt to ash. If the compost in the pits is ready before it is needed in the fields, it can be removed from the pits, piled in a long heap on the ground, and then covered over with 2 or 3 inches of earth. If necessary, it can be lightly plastered to keep out sun and air.

If we will take the trouble to collect all the available cattle-dung and rubbish, and treat it as I have described, we shall be able to nourish our poor famished Mother Earth, and she in return will nourish us and our starving cattle with bumper crops."

(This Kisan Compost can be prepared on a smaller scale in private gardens. Good sizes for pits would be:

1. 14 ft. long, 7 ft. broad, 3 ft. deep.
2. 10 ft. long, 5 ft. broad, 3 ft. deep.
3. 8 ft. long, 4 ft. broad, 2½ ft. deep.

Another possible reason might be the situation. Vegetable plots should not be right alongside a hedge or surrounded by thick bushes. The strong roots of these woody shrubs draw away the nourishment from the soil. Under big shady trees is, of course, also bad, except for a few special types of vegetables.

When the seeds first sprout they will put forth two little succulent roundish leaves (cotyledons) — their "milk teeth". After some time two more leaves will appear between these baby ones, which will now gradually dry up and drop off. The new leaves will bear the shape and style of the plant to come. *Palak* and carrots are such : they put up first, two tiny long-shaped baby leaves. I may mention here, that the mustard salad to be grown in a *thali* which I described last week, is cut during the "milk teeth" stage, and that is why it is so succulent and crisp to eat.

When your vegetables have grown up a little bit, and become well-rooted in the soil, you must look to the weeding of the plots. All grass and other weeds which may make their appearance, must be pulled out by the roots. Do not weed just after watering, when the ground is wet, otherwise much soil will come up with the weeds, and this will disturb the roots of the young vegetables. Whatever thinning has to be done should be carried out at this time.

The next stage will be when the plants are getting well grown. The soil should now be lightly dug and loosened, with a *khurpi* all around the plants. Great care should be taken not to cut or disturb their roots. This job should be done between two waterings. That is to say, the soil should not be wet, and after it has been loosened it should be left for a day or two to let the sun and air penetrate the earth, before the next watering.

If you have sufficient space, you can have one more sowing each of carrots, turnips and spinach. This will give you a prolonged supply. Radish (*muli*) you can go on sowing in small quantities every ten days till the end of January.

Growing of Cold Weather Vegetables

Name of vegetable	Seed rate per acre	Time of sowing (P. Plains H. Hills)	Depth of sowing	Period of germination	Distance apart after sowing, thinning, or transplanting: Rows	Plants	Period of availability of vegetable in plains
Beans (Lobia)	60 lb.	P. mid-Oct. to mid-Nov. H. March to end May.	3"	20 days	2'	1.5'	Feb. to March.

Remarks: Seed sown in trenches 2 ft. wide, 3 ins. deep and 5 ft. apart. In each trench plant two rows 1 ft. apart. Seed is sown 3 ins. deep and 5 ins. to 6 ins. apart. Flood the channel to obtain good germination. When the plants are 15 ins. high, fill the trenches. Pinch off growing points when plants are in flower.

Name of vegetable	Seed rate per acre	Time of sowing	Depth of sowing	Period of germination	Rows	Plants	Period of availability
Beans (French) (Frans-bean)	(a) Tall 20 lb. (b) Dwarf 40 lb.	P. Mid-Aug. to mid-Oct. H. April to mid-June.	1. 5"	12 days	1.5'	1. 5'	Feb. to March.

Remarks: Thrives better at hill-stations than in the plains. The situation selected in the plains should be sheltered by arboreal growth. Seed is sown on ridges or flat in rows 1.5 ft. apart.

Name of vegetable	Seed rate per acre	Time of sowing	Depth of sowing	Period of germination	Rows	Plants	Period of availability
Beet-root (*Chukandar*)	4-6 lb.	P. Aug. to end Oct. H. March to end May.	.25"	12 days	15"	4"-6"	Nov. to March.

Remarks: The seed is sown thickly in rows 15 ins. apart. Seedlings are thinned out to 4 ins. to 6 ins. apart. The seed requires continuous supply of moisture for germination.

Egg-plant (*Bengan*)	8-10 oz.	P. 1. end Feb. 2. June 3. end Oct.	1/8"	6 days	2.5'	1.5'	March to Dec.

Remarks: Seed is sown broadcast in nursery, using 1.5 to 2 oz. seed per marla. The seedlings of 1st and 2nd sowings are usually attacked by *Hadda* beetles, the grubs and eggs of which should be hand-picked. Protect seedlings of 3rd sowing from frost and transplant when the danger of frost is over. Third crop is most popular.

Garlic (*Lahsan*)	6-7 mds. of bulbs	P. Oct. H. Feb. to March	.5"	7-12 days	1'	3"-4"	May onwards.

Remarks: When the tops of leaves begin to turn yellow in the beginning of May, the plants are pulled out, dried and stored for future use.

Lettuce (*Salad*)	1.5 lb.	P. Oct. to Nov. H. Mar. to mid-June.	1/8"	6-8 days	15"	12"	Jan. to Feb.

Remarks: If the seed is to be sown direct in the field, it should be sown on both sides of raised beds about 2 ft. wide, with furrows in between for irrigation. Furrows must be 18 ins. wide and 9 ins. deep. Irrigate immediately after sowing. Water must reach the seeds only by seepage.

Knol-Khol (*Phool gobi*)	1 lb.	P. mid-Aug. to end Oct. H. Feb. to end May.	.5"	4-6 days	1.5'	9"	Dec. to March.

Remarks: Harvest when the turnip-like stem is about 2 ins. to 3 ins. in diameter.

Onion (*Piyas*)	7-9 lb.	P. mid-Oct. to mid-Nov. H. Mar. to end May.	5"	15-20 days	12"	3"-4"	May onwards.

Remarks: Irrigate the seed-bed till the plants are well established. Irrigate immediately after transplanting and then after 12 to 15 days, till the tops begin to fall over. Dig out the bulbs when the leaves turn yellow. Cut off the tops and spread the bulbs over the floor.

Turnip (*Shaljam*)	1-2 lb.	P. Local in Sept and exotic in Sept. to Nov. H. Feb. to mid-June.	.5"	7 days	1.5'	4'-5"	Oct. to March.

Remarks: It is better to sow on ridges for better development of roots. Ridges are of the same specifications as for radish. When the plants are 2 ins. to 3 ins. tall, thinning should be done.

Tomato	1. Early crop 8 oz. 2. Main crop 4-5 oz.	P. 1. mid-July to mid-Aug. 2. mid-Aug. to mid-Sept. 3. mid-Oct. to mid-Nov. (Main crop) H. mid-March. to end May.	.25"	7-10 days.	3'	2.5"	1. Oct. to Nov. 2. Dec. to March 3. May to July.

Remarks: Transplant seedlings of main crop in February when danger of frost is over. The fruit ripens when the weather warms up and is sunny. Seedlings are protected from sun by shading and are transplanted when 6 weeks old. If allowed to remain longer in the nursery they become laggy and do not transplant well. Staking should be done when the plants are 9 ins. to 12 ins. high. The plants must be protected fully from frost.

Harijan, 30-11-1947

Bitter-Gourd (*Karela*)	3-4 lb.	P. March to July	.75"	8-10 days.	2.5'	1'	May to Sept.

Remarks : The vegetable is grown for its bitter immature fruit. The fruit assumes orange-red colour on ripening and is not then fit for consumption as vegetable. Staking is necessary for satisfactory yields. The bitterness of the skin is removed by means of common salt to render the fruit fit to be cooked or fried as a vegetable.

Lady's Finger (*Bhindi*)	16-20 lb. for early crop, & 8-10 lb. for late crop.	P. March-end July. H. April mid-June.	.5"	5-6 days.	2.5'	1'	April to Dec.

Remarks : The pods should be picked when tender as they cook well only in this condition. Picking should be done every second or third day. If the pods are allowed to ripen, the plants stop producing them.

Musk-Melon (*Kharbuza*)	3-4 lb.	P. mid-Jan. to end March	.5"	5-6 days.	5'	3'	May-June.

Remarks : The crop needs hot and dry atmosphere during ripening period to develop the high sugar content and fine flavour. The plant is killed even by light frost. Four to five seeds are sown at one place on both sides of the furrow running through the raised beds. The plant and fruit must remain on dry land. Pick the ripe fruits in the morning. Water should be applied in the evening if the crop is sown on flat.

Long-Melon (*Kakri*)	3-4 lb.	P. mid-Feb. to end April.	.5"	5-6 days.	5'	3'	May-June.

Remarks : It is a much hardier crop than melon. The fruit is eaten raw like cucumbers. When soft and tender the fruit is covered with downy hair and is green in colour.

Remarks: It is a pot herb with small fleshy leaves which are anti-scorbutic in properties. The seeds are sown thickly by broadcasting and are lightly covered with fine soil.

New Delhi, 22-11-'47 MIRABEHN

Harijan, 28-12-1947

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FOOD, FODDER AND ARICULTURE

(1) Agricultural Improvement

The ways and means to improve India's agriculture are mainly: (1) To prevent fragmentation and to fix economic holdings; (2) Country-wide tapping and harnessing of our water resources; (3) Improvement of soil and its productivity through natural as well as scientific treatment of manures, seeds, crop-diseases, prevention of soil erosion etc.; (4) Co-operative effort; (5) State aid and protection; (6) Reclamation of waste-lands inland and along the sea-coasts and the creeks.

Each one of these subjects has been discussed threadbare time and again by experienced men who have devoted their lifetime to their study, without having an opportunity uptill now to put their suggestions and solutions to practical working. Though therefore, they are vital and important, I may not discuss them here beyond mere enumeration.

(2) Cattle, Fodder, Milk

The breeding of draught animals, which are the mainstay of Indian agriculture, must be encouraged on large-scale scientific lines. Laboratory experiments on Government farms or military establishments would not meet the urgent need. The present draught cattle with the Indian farmer are utterly uneconomic and a veritable burden. All promiscuous breeding must be prohibited and castration of all male calves, save those certified by the Veterinary Department as fit for breeding purposes, must be made compulsory by law, even like vaccination of children.

propaganda for food growing. This must be stopped effectively without delay.

While such vast grass areas abound in our province, milk is produced in the heart of cities like Bombay and sold at a rupee a seer and above. All stables in cities and suburban areas round Bombay, Ahmedabad, Poona, Sholapur, Hubli, etc., should be abolished and prohibited by law and cattle-keeping and rearing should be allowed only in rural areas in natural surroundings where grazing, stabling, credit and transport facilities should be provided by Government by pooling together, on popular lines, the resources of charitable trusts and institutions, intended for these purposes, such as *pinjrapoles, goshalas* etc.

(3) Reclamation of Coastal Lands

Thousands of acres of salty lands are lying along creeks in the coastal districts of Surat, Thana and Konkan. These have been washed off and gone waste but could be reclaimed under Government encouragement and help through a system of bunding, and would yield thousands of tons of coarse 'salt-paddy' as it is called. I think some years ago a survey was made to such an end in the Thana District by a special officer appointed by Government.

I also remember an instance in which years ago the whole adult population of a salt-making village in the Thana district, who were engaged in a labour dispute with the employers, embarked upon a joint venture of rebuilding an old bund as a constructive substitute for their enforced unemployment, and succeeded in reclaiming vast lands which were washed off by the creek and totally lost to the village for more than a generation. This first-rate constructive effort proved a guarantee against possible acts of violence, which the organizers feared, on the part of some of the idle strikers and a veritable boon to the whole village in as much as it brought an additional annual yield of several hundred *khandis* of 'salt-paddy' for the village to the permanent benefit of every family.

The problem, however, of reclaiming such areas may be said to be beyond the capacity of any private agency,

All this maladjustment must stop and wise planning follow which would protect the growers against such calamities. Village growers should be discouraged to grow for big and distant cities, but helped to cater local needs within the district and a fair return ensured to them by fixing minimum prices, as in the case of milk, for their undertaking to grow for well-defined restricted areas.

(5) Sewage Waters

In vegetable growing for big cities like Bombay, Ahmedabad etc., and for raising green fodder for city stables utilization of night soil and sewage water could be thought of with advantage. If drinking water could be brought to cities from distant catchment areas, the city sewers may be as well diverted for manuring and irrigating vast areas in distant suburbs. It may be relevant to say here that the Ahmedabad Municipality has been utilizing part of its sewage system in this manner for years and has been making a decent income. In Delhi, Allahabad, Karachi and elsewhere too, I think, this is done more or less.

SWAMI ANAND

Harijan, 2-2-1947

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USEFUL HINTS

[The following excerpts are taken from Prof. Kumarappa's notes.]

Co-operative Societies

Co-operative societies are ideally suited organizations, not only for developing village industries, but also for promoting group efforts by the villagers. A multipurpose village society can serve a very useful purpose in a variety of ways such as :

(1) Stocking of raw materials for industries, and food grains needed by the village people.

On the whole the prices of the agricultural products should be made to compare favourably with those of industrial products.

Commercial crops such as tobacco, jute, sugar-cane, etc. are doubly wasteful. They reduce the food production for man as well as for animals which would otherwise have got their fodder from good crops.

The supply of *gur* which may be reduced with the decline of sugar-cane crops of the factory varieties can be made good by the production of *gur* from palm trees now tapped for *toddy* or from those which are found or can be grown in waste lands in sufficient numbers as practically to meet our demand in this respect. The best land put under sugar-cane today can then be utilized for the production of cereals, fruits and vegetables which India needs so badly today.

Irrigation

The need for providing irrigation facilities to all the villages cannot be emphasized too greatly. This is the foundation upon which agriculture depends for its progress, in the absence of which it remains a gamble. A drive for sinking wells, enlarging and dredging tanks and building canals has to be launched. The power engines used in rice and flour mills now can be acquired by the Governments to pump up water from tube wells. No proper manuring can be done without water facilities, as manure in the absence of water is harmful.

Harijan, 12-5-1946

"A Magnificent Food"

The following opinion, expressed by Lt. Col. Mc Carrison, will not but arrest the attention of the readers:

"Whole wheat, however poor it may be is a magnificent food; it is better than cod-liver oil and marmite put together."

C. S.

Harijan, 5-10-1935

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SOIL FOOD v. DRUG

In human nutrition people recognize the difference between staple food and drugs. Usually the staple food is eaten in large quantities and it contains all the elements necessary for the human body in the right proportions or nearly in the right proportions. Milk for instance contains fat, protein, calcium and vitamin A besides other similar ingredients. But if for any reason the body of a patient needs more vitamin A than is found in milk because of some diseased state of the body, then to meet this need vitamin A may be administered in the form of some liver products, such as shark liver oil or cod liver oil. We recognize, therefore, that an ordinary wholesome food differs from medicines. The medicines are administered in small doses according to the needs of the particular patient and his condition. An old man may take a different dose of medicine from that of a middle-aged one, the latter would need a different dose from that of a child.

Again, certain drugs are used as stimulants when individuals want to go beyond the energy provided by nature, for indulging in dances at night clubs. Such individuals stimulate their bodies to meet the extra demand of energy by taking injections of morphia and such other drugs. For the moment they appear to be full of vitality and energy, but a time comes when they suffer

Where the mineral contents of the soil may be deficient owing to flooding and washing away of certain mineral salts it may be necessary to supply that deficiency by introducing certain chemicals. But this is a process which is analogous to medicine to the human body. Just as medicines can only be administered by a qualified doctor after a careful diagnosis with a prescription suited to the particular condition of the patient, similarly this method of adding chemical fertilizers to the soil should only be adopted after a careful analysis of the soil and the requirements of plant life to be raised on that soil. Without such proper prescription given by a soil chemist, to freely use chemical fertilizers would be as foolish as a layman administering medicine to a patient, and it may be equally tragic in its results. Artificial fertilizers, therefore, are not plant food but they are medicines to the soil.

Just as the human system can be stimulated beyond its normal performance by drugs such as morphia, similarly plants also can be subjected to an unhealthy enhancement of their growth and production by the use of drugs. Chemical fertilizers can produce this effect; but it is an unhealthy, short-sighted and unnatural state of affairs.

If our agricultural food production is to supply the normal requirements of the human body, the plants from which we draw that food must also be healthy, normal and well-fed. Any artificial stimulant or artificial feeding will naturally affect our food as we depend upon, specially in our country, so largely on plant life as food. Hence it becomes imperative that we should watch the food given to these, the medicines administered and the drugs supplied. If there is any undue dose at any stage it will ultimately tell on the health conditions of the human being.

New Zealand grows most of its food supply on soils manured by chemical fertilizers and it was found that the people of New Zealand were subject to catarrh, influenza, septic tonsils and dental caries. Therefore,

without any control as to their use. Therefore, even if we wish to introduce fertilizers as medicine, the condition precedent to such a course will be the introduction of agricultural chemists in large numbers. In our country we have not got physicians even for human beings in sufficient numbers. Where are we to find soil physicians in greater numbers?

With these facts before us we regret to notice that our ill-advised Central Government is pushing with the promotion and extension of artificial fertilizer factories. In Bihar at Sindhri, a scheme for artificial fertilizer factories involving foreign machinery to the extent of Rs. 12 crores and other buildings and equipment running into a further 10 crores are being pushed forward. We hope better counsels will prevail and the suicidal schemes will yield place to carrying on researches on more healthy lines which will provide a considerable amount of the organic matter, that is going to waste today, as suitable manures to our fields. Only such a course will provide us with health-giving food and save us from the unscrupulous exploiters who, regardless of the harm they are causing the people, consider accumulation of wealth the one and only objective in life.

J. C. KUMARAPPA

Harijan, 2-3-1947

FOOD CRISIS AND SOIL FERTILITY

The present crisis is not directly due to the low fertility of the Indian soil. There are a number of factors which are responsible for the food-shortage. But the Government could really save the country from the crisis by taking steps, which it has failed to do, to increase production by applying manures to the soil. It is high time for the National Government to increase the crop production. If India can produce more cereals like paddy, wheat, *jowar*, *bajra* etc. which form the staple and most important ingredient of the food materials, the chance of a famine or a crisis will be much less. Many parts of the country depending on rice have always been substantially helped by the crops produced in Burma, Siam and other countries. In the Travancore State 367,000 tons of rice are annually imported as against 250,000 tons produced in Travancore. Bengal and Madras have also to depend a good deal on imported rice. Hence there is plenty of scope for the better production of those cereals which respond well to treatment by nitrogenous compounds.

The question regarding the exhaustion of the Indian soil has been repeatedly asked; but so far no satisfactory answer has been forthcoming. Dr. Voelcker in his *Improvement of Indian Agriculture* recorded the following results at Rothamsted (in England) in the case of wheat grown on fields continuously unmanured for over 50 years:

	Crop yield in bushels per acre
8 years (1844-51)	17
20 years (1852-71)	13.9
20 years (1872-91)	11.1 (1 bushel — 30 seers)

These results show that there is a slow deterioration of the unmanured fields at Rothamsted. Dr. Voelcker concluded that under existing conditions of agriculture, the soil of India must become gradually poorer.

soil surface, supplies the plant need. The nitrogen need of crops in the tropical countries, can be met by the nitrogen fixed from air due to the energy liberated from the exidation of the cellulosic materials, left behind in the soil after harvesting. Moreover, the available nitrogen in rain water in the tropics is greater than in that of temperate countries. In the cold countries, chiefly due to the inactivity of Azotobacter caused by the low temperature of the soil and lack of sunshine, the cellulosic and other energy-rich materials added to the soil along with plant residues, are not oxidized as readily as in tropical soils and hence much nitrogen fixation is not possible in the soil of temperate countries. This explains the slow deterioration of the unmanured fields of Rothamsted already referred to. From the above observations, it seems that in the tropical countries, almost a constant yield of crop which is not high in unmanured fields, is possible, due to the addition of nitrogen to the soil by the fixation of atmospheric nitrogen, caused by the energy produced from the exidation of plant residues, left in the soil or added to it. Also the available nitrogen in tropical soils is usually over 10 per cent of the total nitrogen while in the countries having temperate climate, the available nitrogen is between 1 to 2 per cent of the total nitrogen. It is clear, therefore, that the amount of ammonium and nitrate ions, available in tropical soils for plant growth, is much greater than that available in cold countries, although the total nitrogen in cold countries, may be double or treble of that in the tropical countries.

Manuring Old and New

Manuring can be done in two ways : by adding nitrogen-rich substances, e.g. nitrates, ammonium sulphate etc. and secondly, by adding carbonaceous substances which may help in fixing atmospheric nitrogen. The fertility is due to the available nitrogen (as ammonia and nitrate) and it is by increasing the nitrogen content that the fertility of the soil can be raised.

As regards inorganic manures, the artificial manures like ammonium sulphate, ammonium nitrate etc. which

lengthy process. While it is relatively simple to maintain the fertility of soil rich in humus, it is difficult in a soil which is mainly mineral to build up the necessary humus. . . Directly or indirectly all plant and animal life is made possible by the soil humus. To its increase may be systematically employed all those organic materials which at present are virtually wasted. The greatest attention should be devoted to the albuminous or nitrogen containing organic rejects and residues of human and animal life."

The best manure, well-suited for this hot and poor country like India, is certainly farmyard manure (cowdung) or any substance rich in carbonaceous compounds e.g. molasses, leaves, plant residues etc. When these materials are not available in large amounts, they may be mixed with ammonium sulphate, ammonium nitrate or urea manufactured in this country. To purchase artificial manures from abroad is likely to be costly and the poor cultivator may not be in a position to purchase imported material.

Burning of Cowdung Criminal

As explained above cowdung or farmyard manure is definitely the best manure for increasing the soil properties and steadying the crop yield. If it is utilized properly, it may really serve as a boon to the poor Indian farmer by giving a rich return of steady crop-yield on a relatively cheap price. It is really a pity that cowdung being the most economic manure, the Indian farmer burns, knowing little that he is burning his own money. But the question arises as to what fuel should he use. Unfortunately, cowdung is the only fuel cheaply available to him. The Government in the past have totally neglected this important problem and seem to have no schemes even at present. Under a National Indian Government which propose to launch a thousand and one schemes for the improvement of Indian agriculture, steps must be taken to really better the lot of the Indian farmer by procuring some other fuel for his use and leave cowdung only for

As a matter of fact inorganic manures are no good in improving the soil properties. However, they may be useful for getting better crops in the hour of need. It is no exaggeration to state that the standard of civilization of a country can be judged by the amount of nitrogen of the air fixed for the production of synthetic ammonia and nitric acid from the nitrogen of the air. It is pleasing to note that India is also going to have some plants for the manufacture of manure. But the Government ought to be aware of the fact that unless we can compete with sister countries like China and Japan in the production of manures, the fate of locally manufactured manures would be no better than that of *gur* (sugar) some years back. It does not sound economical and wise to establish a plant in Bihar and get raw materials (gypsum) from Rajputana about 800 miles apart.

The manures that can be manufactured in India are urea, ammonium nitrate, ammonium sulphate etc.

How to Reclaim

The chief defects of alkali land are:

1. The alkalinity. We have exampled several samples of bad *usar* lands and we find that the alkalinity is very high. Neither Azotobacter nor nitrite-formers are observed in cultures obtained with these soils.

2. The amount of calcium compounds is less in these soils than in normal ones. The amounts of exchangeable bases are less than in normal soils.

3. The nitrogen content is small. In several samples examined by us the total nitrogen varied from 0.008 per cent to 0.02 per cent; normal soils contain aproximately 0.053 nitrogen in tropical countries.

4. The soil is highly impermeable to water.

5. The soil particles do not settle readily when shaken with water.

6. Lacks bacterial activity.

It is estimated that the total area of *usar* (alkali) lands in the United Provinces alone is more than four

permeability appreciably increases on this treatment after four years and the process of reclamation takes four years which is also the time required by the application of gypsum or powdered sulphur.

Molasses can also be used for this purpose. Alkaline lands have been successfully reclaimed near Cawnpore, Allahabad and in Mysore by the application of molasses at the rate of one to ten tons per acre and a good rice crop has been grown in these reclaimed areas where no vegetation ever grew. We have applied molasses in amounts varying from two to five tons per acre of alkali land at Soraon (near Allahabad) and at the Government Farm of Unao, and have obtained excellent results with rice. The Mysore Government has been able to obtain 1200 to 1800 lb. of rice grains per acre of alkaline land, using one ton of molasses per acre on plots where crops failed previously.

Research work carried on in Allahabad, Bangalore, Java, Hawai and other sugar-producing countries shows that molasses added to the soil along with carbonic acid and organic acids like acetic, propionic, butyric, lactic etc. are produced in the early stages in the decomposition and partial oxidation of the carbohydrates present in molasses. Consequently the acids present in molasses and those obtained from the decomposition and partial oxidation can neutralize the alkali of the soil rich in alkali. Moreover, the carbonic acid which is produced in large amounts from the decomposition and oxidation of the carbohydrates, can convert the sodium carbonate into bicarbonate. Also in the process of the escape of carbonic acid from the molassed soil, the latter is rendered porous and its tilth is improved. The investigations at Allahabad show definitely that the moisture content of the molassed soil is appreciably higher than that of the unmolassed one. The lime, which is added to the soil along with the molasses, is rendered soluble by the organic acids formed from molasses and is helpful in the conversion of sodium soil into a calcium one. Moreover the small amounts of sulphuric acid present in molasses convert

were regularly gathered up and the two mixed properly together more than double the present quantity of manure would be produced, and its quality would be far superior.

To tackle the production of this farmyard manure is a more urgent job than the settling up of big factories for manufacturing artificial fertilizers. Artificial manure needs big outlay in capital, machinery and experts, and for a long time it will reach only a very limited number of our seven lakhs of villages. It also requires careful application whereas farmyard manure needs no outlay of any kind. The materials are lying there waiting to be gathered up, the peasant with his ordinary tools can do all the work and throughout the world farmyard manure is acknowledged as the all round best and safest.

In Kisan Ashram I have started experiments in the simplest possible methods of manure making. I am not yet able to give exact figures and timings as the work is in its initial stages, but the procedure I am at present trying out is on the following lines: A shallow pit is dug 2 ft. deep, 22 ft. long and 10 ft. broad, (the length and breadth can be varied according to the daily amount of stuff to be handled). Each day grass, leaves and other light rubbish is collected and heaped near the edge of the pit; cow-dung and horse droppings are collected and heaped separately next to the rubbish. At the end of the day rubbish is spread in a thin layer over a little less than half the bottom of the pit and on top of that a thin layer of dung, broken up and sprinkled by hand. Thus one layer on top of another is spread according to the amount of material collected during the day. The last layer is always rubbish so as to protect the dung from sun and wind. Every third day water is poured on the layers sufficient to saturate them. When half the pit is full the manure is covered with a thin layer of earth and left for six to eight weeks, after which it is drawn to the other half of the pit. Care is taken to cut away the layers in thin vertical slices. When the manure is laid out thus in the other half of the pit, it is again saturated with water and covered with earth. After another six to eight weeks

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WEALTH FROM WASTE *

The Madura Co-operative Sale Society was able in 1937-38 to secure from the Madura Municipal Council a contract for the disposal of night-soil and rubbish for a sum of Rs. 25,000. In previous years, such contracts had been taken by private individuals, who supplied the night-soil and rubbish to agriculturists from the surrounding villages on their own terms and made no attempt to treat the refuse scientifically. The price charged was Rs. 2-8-0 per cart-load of night-soil and Re. 0-12-0 per cart-load of rubbish. After framing a rough budget of working costs, the Sale Society straightaway reduced the price to Re. 1-12-0 per cart-load of night-soil and Re. 0-9-0 per cart-load of rubbish. The latter price was later on reduced to Re. 0-7-0 ; and it was found from experience that further reductions were possible, which unfortunately could not be carried out as the contract was not renewed for the year 1938-39. Notwithstanding the reduction in price effected, the Sale Society was able to have at its disposal a net income of Rs. 10,896 at the close of the year which shows the considerable measure of exploitation that was practised in the past by private contractors. This surplus will be available to the agriculturists, numbering as many as 276, who become members of the Society, in proportion to the purchases made by them. The rebate will mean a further reduction of roughly annas two in the rupee of the price paid.

The lowering of the cost of the refuse does not represent the Sale Society's main achievement. It set about investigating how best it could utilize the refuse so as to be able to supply manure to agriculturists cheaply, and in

* Based on an article on "The Co-operative Supply of Municipal Refuse in Madura" by Mr. G. G. Spitteler, Deputy Registrar of Co-operative Societies, Madura, published in the *Madras Journal of Co-operation* — Vol. XXX. No. I. July 1938

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BEWARE OF BUREAUCRATIC PLANS

I

In September last, Reuter cabled from Washington that a mission headed by a British knight was visiting the United States, 'after five months' stay in England' in connection with the present irresponsible Government of India's project to set up a factory for the manufacture of 3½ million tons of ammonium sulphate yearly at an expenditure of 40,000,000 dollars or over 13 crores of rupees.

But no greater misfortune could perhaps befall the people of India than that their land should be poisoned with artificial fertilizers, the use of which has been condemned by British authority on agriculture themselves.

We must replace what we take from the soil. The harvesting of crops leads to the impoverishment of the soil which should be replenished by cattle dung and by ploughing in of grasses (See Joseph James' *Must We Starve*? distributed by F. Muller). But chemical fertilizers affect the soil in much the same way as drugs affect the human body. They produce temporary exhilaration, and then there is a relapse. Bumper crops are obtained but they cause new diseases and deficiencies in the soil. Balfour in *Living Soil* quotes from a circular letter sent by Sir Albert Howard :

> "In the South of France grapes are raised very largely by means of artificials : the many diseases are combated by poison sprays.
>
> "In Baluchistan on the other hand the vine is always manured with farm-yard manure ; artificials are not used ; the crops have no need for fungicides and insecticides, because diseases are practically non-existent."

deserted by wild rabbits." Salesmen used this as a recommendation: "Use our soluble phosphate fertilizer and keep the rabbits away", or "Use enough nitro-chalk, and you will get big greens that rabbits will scarcely touch; if they do, they die."

It was found that cattle refused to graze in a field dressed with artificials.

Balfour also cites the case of a school which at first raised its vegetables with artificials and then with the Indore compost. The Head Master said that at first cold, measles and scarlet fever used to run through the school, but afterwards they tended to be confined to single cases imported from outside. There was also definite improvement in the caste and the quality of the vegetables.

McCarrison, when in charge of the Deficiency Diseases Inquiry in India, found that when wheat was grown on soil treated with farmyard manure, its nutritive value was 17 per cent higher than when grown on soil treated with complete chemical manure. Wheat grown under the latter condition contained a smaller amount of vitamin A, which is essential in maintaining the resistance of man and his domestic animals to infectious diseases.

McCarrison also found that 'if the vitamin B value of cattle manure millet be taken as I, that of chemical manure millet is approximately .66'.

V. G. D.

Harijan, 14-4-1946

farmers to bankruptcy. The number of sheep is down by one million a year, so that although Britain badly needs wheat, there are not enough sheep to tread and manure the soil.

In fact, so-called scientific farming is too exhaustive and therefore ultimately destructive all over the world, as for instance in Egypt, where "the soils have steadily deteriorated with the introduction of a more efficient technique" (*Rape of the Earth*).

Mechanized farming in England also called for the wholesale destruction of hedges which according to E. B. Balfour is responsible for the increase in insect pests, for "with the hedge has gone the shelter for the small birds who prey on insects." Fields in England were formerly small. There was an abundance of hedge-rows and frequent trees which did much in the windy climate of Britain to "maintain the soil in position and to increase its productivity.". . . . . But the size of the fields is now enlarged in order to accommodate modern farming machinery.

Such being the experience of British farmers, may it not be that the failure of the United States to supply us with even 500 tractors while she is delivering 50,000 tractors to Russia and 20,000 more to France is only a blessing in disguise?

Two years before A. E. died, the Government of the United States invited him to come and see what was wrong with agriculture. The apparatus had been perfected, but workers were refusing to carry on. A. E. found excessive organization had destroyed the soul of the thing; machinery so intruded between man, soil and beast that man could not bear work any longer.

Let us bear in mind these wise words of Lord Northbourne:

> "The very best in farming as in all other crafts can only be produced by hand, and less than the best will not do."

V. G. D.

Harijan, 14-4-1946

by ploughing, which brought about health-giving fertility. Subsoiling 2 ft. down released valuable minerals which deep-rooting plants brought to the surface. New methods of haymaking and harvest improved fodder with startling effects on the large livestock population.

"Most important of all, Friend Sykes used humus (scientifically rotted animal and vegetable refuse) to manure his land. The highly complex bacterial life of the soil was enriched, instead of poisoned by chemicals.

"The fashionable approach to soil is not biological but chemical," objects Sykes. "One hundred years of interested propaganda by vested industrial interests has pushed to the fore this 'artificial' view." He contends that artificial manure produces food "which reduces vitality so low that resistance to disease is becoming less and less."

According to him, "we are approaching the greatest of all menaces that have ever faced civilization — the day when soil fertility in almost every country will be a thing of the past."

Here are Sykes' views on other artificial practices which threaten to contribute to this impending doom:

"Artificial insemination may prove to be one of the most mischievous practices that so-called scientific agriculture has ever dared to play with.

"Sewage emptying into the sea is scandalous and abominable wastefulness. It should return to the land.

"Artificially dried grain often will not make bread. Sterility in women coincides with the introduction of the white loaf. Nothing is so important to man than that he should speedily return to the consumption of the whole wheat bread.

"Burning straw instead of ploughing it back into the soil is one of the most heinous crimes any farmer can commit.

"Many farmers keep cows indoors closely tied by the neck for five months in the year, feed them with

miles and miles of country, I could see only six plough engaged in the work !

When I asked the villagers what had happened, I was told that the flood had done such damage to the cattle that only a very few oxen were available.

It seemed to be a hopeless situation, since the ground was becoming as hard as bricks under the burning heat of the sun and the ploughing work had to be finished quickly.

So we got a Ford Tractor down from Calcutta, and, with a disc-harrow instead of a plough, it cut through the black soil on the surface at a tremendous pace without going too deep. The work was rushed through in a marvelously short time. The villagers flocked to see the new monster at work demolishing the surface. They could get no work to do themselves, however, because the machine only needed two mechanics to keep it going.

The commercial traveller's eyes glistened as I told about these wonderful deeds of the "Ford Tractor". He had hardly noticed my last significant sentence !

But when I went on to tell the story of what happened later he listened much more carefully and remained thoughtful. I told him how the landlords of the District wanted me to leave the Ford Tractor with them, for the ploughing work of the future, and not to send it back to Calcutta.

"No," I replied, "certainly no ! On no account would I do such a thing ! Just for this flood disaster, it had its use but when the oxen are restored and normal times come back again. . ."

"What then ?" asked the commercial traveller eagerly.

"Why, then," I replied, "*I should have no use for the Ford Tractor* ! It would turn out at least fifty families off the land, who are now healthily employed. It would drive them into the Jute Mill close to Calcutta. Can you contemplate a worse fate than that ?"

This last question I put to the commercial traveller, while we were seated alone on the deck. He looked into

coming recognized. In the long run it carries with it far greater significance than many of the political and social efforts which we place in the foreground of our national programme.

This truth first came home to me, with a misery that I can never forget, owing to the floods in the delta of the Mahanadi, which devastated Orissa. Every single inquiry which we made at that time pointed to the deadly harm that had been done, in the upper courses of the river and its tributaries, by denuding the land of its covering of forest trees, which held the excess of water till it sank into the soil. One lesson I learnt by heart, namely, that there would be no true remedy against future floods until the old course of the Mahanadi was conserved by a Conservation Board which would deal with its flow in its upper reaches and not with the delta only.

In a very important article, in *The Spectator* of Feb. 12, Mr. G. B. Jacks declares that soil erosion, leading to gigantic floods, is taking place not only in America, but also in South and East Africa, and in India and Australia. He calls it Nature's revolt against modern civilization. Either nature will win outright in the end and a much larger surface of the globe will become barren, or else man will learn to modify and curb his own wasteful habits. "The onset," he writes, "of soil erosion is insidious, and often not noticed until the land is already so ruined that reclamation is impossible. The desolation produced by soil erosion has to be seen to be believed. Comprehensive, scientific planning, with land salvation as its objective is now the only choice for countries that are most affected." He mentions India among them. He adds the words: "Men have dreamed of a prosperity dominated by helicopters, hygienic clothing, sky scrapers, etc.; but present indications show that, perhaps, the first really scientific civilization will be based on more prosaic things, such as contour terraces, afforestation, dams, and above all the maintenance and improvement of grass."

times applied to pasture land to improve the herbage and kill insects injurious to grass."

The same was testified to by Sir Thomas Bernard, Bart, in his evidence before the 1888 Select Committee on Salt Duties in England. Quoting from a letter from Mr. Bevin of Chester, he described the results of an experiment, made on a farm "overrun with coltfoot and other weed", of strewing on it ashes from salt works. The account concluded:

"The effect on the corn crops, besides destroying the weed completely was very great. I do not exaggerate in saying that on the part of the field on which this manure was laid, the crop was nearly treble in proportion and the grain of excellent quality".

The following figures of the issue of denatured salt will show how our agriculture is starved of the necessary manure:

1914-15	2644 mds.
1915-16	2655 ,,
1918-19	Suspended on account of shortage.
1919-20	175 mds.
1920-21	402 ,,
1922-23	772 ,,
1925-26	2407 ,,

In cattle the salt hunger obtains in such an intense form that cattle often resort to human or animal excreta by the wayside to satisfy it.

"I marvelled very much at this abnormal appetite", observes Ratton in his Handbook on Salt, "but subsequently finding that such cattle were depastured on poor grass without any salt whatever either in their natural food or in the crude state, I seized to wonder, for these excrements happen to contain an appreciable amount of salt and are often rich in it. The consequences of the habit are most dangerous".

Ratton goes on to describe how it gives rise to the disease of hytids, and how herds of cattle perishing therefrom had been saved by the liberal use of salt "not that

of human civilization. I am not sure that the elimination of animal power and the installation of lifeless machinery in the Western countries has not something to do with the brutalization of human nature to which frequent and fierce wars bear witness in common with other evils peculiar to the West.

This is the humanitarian argument, which must be reinforced by the economic argument. We shall now deal with this latter, and in doing so make free use of a chapter in Shri N. G. Apte's *Thoughts and Work about Villages* entitled "Economics of the Bullock" (Published: Shri Sardesai, Samarth Bharat Press, Poona 2).

The bullock is not only a living tractor; it is also a living fertilizer factory and gives us farmyard manure which supplies nitrogen and improves the porosity of the soil, thus helping to increase the moisture content of the soil as well as proper aeration. These three factors are essential to plant growth. 'No amount of concentrated manure would help if the porosity of the soil and consequent aeration of the soil are not improved.'

Artificial manures are an unmitigated curse, as has already been shown in these columns. Then there is green manuring with *sann* hemp and other leguminous plants, but that too compares unfavourably with farmyard manure. For, the green manure occupies the soil for a season from the time of planting till it is sufficiently decayed, but cannot be fed to the animals. On the other hand if we grow a fodder crop instead of the green manure on the same piece of land, at the end of the season we would get fodder enough for two animals. These animals would work for us the whole year and give us the fodder back in the form of manure better adapted for assimilation by the soil, with probably some additional nitrogen derived from metabolic processes of the animal body.

Most of the nitrogen taken from the soil will be returned in the dung as the bullock requires only carbohydrates for work. These carbohydrates are no good as a manure as most of the carbohydrate material in the crop is fixed from the atmosphere during the process of meta-

"Machinery may be introduced when the existing man and animal power is fully occupied. At present this power is not fully utilized, and therefore there is no occasion for the introduction of machinery."

V. G. D.

Harijan, 14-4-1946

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DEVELOPMENT OF DUAL-PURPOSE CATTLE IN INDIA

The term dual-purpose, in its general sense, means the breeds which from their point of view, can serve two distinct purposes. In India, the breeds of cattle, the male of which are suitable for draught and female for milk, are known as the dual-purpose types.

There has, of course, been a great deal of controversy going on among livestock breeders regarding the advisability of attempting to develop dual-purpose type of cattle in India. This question has been engaging the active attention of the breeders and those interested in the amelioration of our cattle but it was brought to the forefront by the publication of the report of the Royal Commission on Agriculture in 1928. Since then two definite schools of thought have been evolved. In order, therefore, to view the whole question in its correct perspective, it will be more helpful to briefly repeat here the points of view of both the sides.

Those who hold that the cattle in India should be developed for specific purposes and not on dual-purpose lines contend that:

(1) Indian cattle, as a whole, have been bred from times immemorial, for special purposes. As a general rule, the fastest and best working breeds of cattle are not good milkers, and high milk yield is not compatible with capacity for fast work. Thus the two factors of milk and draught do not go hand in hand.

cultivator will have to maintain different animals for different purposes, one animal for production of males suitable for draught and the other to meet his milk requirements. This will necessarily mean keeping of a larger number of cattle than the land can economically maintain.

(2) The Indian cultivator is so poor that he cannot afford to maintain larger heads of cattle. What he needs is a type of cow capable of producing a fairly strong male suitable for farming operations on his land and supplying, in addition, reasonable quantity of milk for the requirements of his family. Thus, it should be one animal which should serve both the purposes.

(3) With all the cattle, on the average, half the calves born will be males and of those a very small proportion will be fit as stud bulls. If different breeds are kept for different purposes the male calves of the milk types will not be comparatively useful as at present is the case with our best dairy types such as Sahiwal and Red Sindhis, whereas in the case of dual-purpose breeds the male can be reared for draught. Thus, in India, where both draught and milk factors are essential, the dual-purpose stock for ordinary cultivator is more economical than that bred for specific purposes.

A cursory glance at the above points of view will be sufficient to show that, as in many other such controversies, there is a great deal of truth on both the sides. These are, in fact, two sides of the same picture. For me it is very difficult to visualize a flourishing cattle industry in any country, without special breeds for specific purposes and dual-purpose breeds existing side by side.

Great Britain, on the whole, is an industrial counrty; yet we find some of the most special type breeds as well as dual-purpose types in that country. All such types exist side by side and flourish. They have some of the finest breeds of cattle for special purposes and still by far the most numerous breeds are those which show dual-purpose characteristics such as Short Horns, Dexter and Red Polls.

powerful and strong workers. Gir bullocks may not be agile and quick as Hariana, and Hariana cows may not be as good yielders as Girs, but both possess a combination of characteristics, which are really suitable to the requirements of an average cultivator. Such animals have definite economic value and they will be the most popular in those tracts where they can thrive. Thus, in my opinion, in India, as in all other cattle breeding countries, there is enough room for the development of distinct types as well as dual-purpose cattle. Special types are recommended for those tracts where natural facilities of food and grazing exist for the development of those specific purpose cattle, while for the average cultivator who is too poor to maintain such specialized strains on account of his limited resources and shortage of feed, the dual-purpose animals are most suitable.

Before concluding, I must, however, draw the attention of the readers to the fact that there are large numbers of cattle in India, which are not only poor yielders but their bullocks are also of poor quality. Here, no mistake should be made on that account. Such breeds are not dual-purpose and therefore, while planning for cattle development distinction should always be made between dual-purpose breeds and no-purpose breeds. Such animals need special attention and all possible measures should be taken to grade them up by use of improved stud bulls.

(Sir) DATARSINGH

Harijan, 23-6-1946

used for plastering of walls and floors, for fuel and for manure. The bullock can also be used for all kinds of work — carting, water-lifting and the like, whereas the tractor has to have expensive oil purchased for it from the bazar and it gives nothing back from its belly. At the same time the only kind of haulage it can do, is field cultivation on a broad outlay.

When we have developed village groves for fuel-wood, we do not want to find that cow-dung has been greatly reduced owing to the removal of the bullock from village cultivation. On the contrary, we want to find masses of cow-dung released for the impoverished Indian soil. Anyone who is familiar with Indian village life knows the part which cow-dung plays. Without it the whole village dwelling structure and economic life would become broken down.

So it comes to this, that tractors be used for big scale reclamation and, during the years that these lands are being brought into a good cultivated condition, every effort must be made to control and improve the breeding of the present herds of cattle in the province, so that ever-increasing quantities of good bullocks become available for cultivation purposes (See next chapter).

Before closing this note, I would like to express a word of warning regarding tractors. At present the tractors are being obtained from abroad. This means that spare parts, extra to those supplied, will be difficult to get and very expensive. At the same time expert engineers and mechanics are very difficult to find in India today. This means that before any big scheme is handled, men must be thoroughly trained for taking up the job, and local workshops must be provided at the spots where the reclamation work is to be taken up.

The implements are the most troublesome part of tractor cultivation, as they frequently break or get out of order, and if we are to look to foreign countries for both the implements and their parts, tractor cultivation is bound to be a failure. Anyway, it would be a blot on

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CATTLE IMPROVEMENT

The following is the gist of a long article by Sardar Datar Singh. He says that inasmuch as India is primarily an agricultural country the improvement of cattle means nothing more nor less than the development of agriculture. India possesses over 29 per cent of the world's cattle population and yet the production of milk per capita is very low. It works out at 7 ounces per head per day here as against 56 and 45 respectively in New Zealand and Australia. 20 to 30 ounces per day is the minimum required according to dietary standards so that our output would have to be more than trebled. The average quantity of milk yield per cow per year is only 750 lb. which too is sadly below standard. The root cause of this low yield is malnutrition. Against the total estimated annual requirements of 270 million tons roughage and 50 million tons of concentrates only 175 and 3.75 million tons are available respectively. In addition there is wastage in storing, drying, harvesting and preparation of food and fodder.

1. The Sardar makes the following suggestions in regard to proper feeding:

(a) The cultivation of fodder crops must be increased by encouraging cultivators to put more acreage aside for this purpose. The most nutritious and high yielding fodders should be cultivated and in addition a number of perennial grasses can be introduced, such as Elephant, Guinea, Rhodes as also leguminous crops, e.g. Berseem and various types of beans which make good mixture with non-leguminous crops.

(b) The conservation of fodder crops and elimination of waste through silage, also improved methods of drying fodder.

(c) The provision of good and ample grazing areas. Grazing lands having diminished greatly in area, it is imperative to adopt some system of controlled grazing

breeding farms of no less than 600,000 cows and 10,000 bulls but as this is neither feasible nor economically sound, the Sardar suggests making full use of the existing organizations and institutions such as *goshalas* and *pinjrapoles.* If properly reorganized this could, at a very conservative estimate, provide 25,000 stud bulls annually as well as the same number of bullocks and 50,000 improved female calves every year.

3. The control of contagious diseases is of great import. Over 30 million cattle die annually from rinder pest, haemorrhagic, speticaemia, black quarter and anthrax. Strict attention should be paid to both preventive and curative measures. The average villager should not only be educated in the care of cattle but proper medical aid should also be made available to him.

New Delhi, 27-9-'46 A. K.

Harijan, 13-10-1946

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INDIVIDUAL or COLLECTIVE ?

The most important question for consideration before the recent Go-Seva Sangh Conference was whether cow farming should be in the hands of individuals or done collectively. I myself had no hesitation in saying that she could never be saved by individual farming. Her salvation, and with her that of the buffalo, could only be brought about by collective endeavour. It is quite impossible for an individual farmer to look after the welfare of his cattle in his own home in a proper and scientific manner. Amongst other causes lack of collective effort has been a principal cause of the deterioration of the cow and hence of cattle in general.

The world today is moving towards the ideal of collective or co-operative effort in every department of life. Much in this line has been and is being accomplished. It has come into our country also, but in such a distorted form that our poor have not been able to reap its benefits. *Pari passu* with the increase in our population land hold-

(6) The expense on fodder will be comparatively far less under the collective system.

(7) The sale of milk at good prices will be greatly facilitated, and there will be no need or temptation for the farmer to adulterate it as he does as an individual.

(8) It is impossible to carry out tests of the fitness of every head of cattle individually, but this could easily be done for the cattle of a whole village and would thus make it easier to improve the breed.

(9) The foregoing advantages should be sufficient argument in favour of co-operative cattle farming. The strongest argument in its favour is that the individualistic system has been the means of making our own condition as well as that of our cattle pitiable. We can only save ourselves and them by making this essential change.

I firmly believe too that we shall not derive the full benefits of agriculture until we take to co-operative farming. Does it not stand to reason that it is far better for a hundred families in a village to cultivate their lands collectively and divide the income therefrom than to divide the land anyhow into a hundred portions? And what applies to land applies equally to cattle.

It is quite another matter that it may be difficult to convert people to adopt this way of life straightaway. The straight and narrow road is always hard to traverse. Every step in the programme of cow service is strewn with thorny problems. But only by surmounting difficulties can we hope to make the path easier. My purpose for the time being is to show the great superiority of collective cattle farmig over the individual effort. I hold further that the latter is wrong and the former only is right. In reality even the individual can only safeguard his independence through co-operation. In cattle farming the individual effort has led to selfishness and inhumanity, whereas the collective effort can abate both the evils, if it does not remove them altogether.

Sevagram, 8-2-'42 M. K. GANDHI

(From *Harijansevak*)

Harijan, 15-2-1942

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